FIG. 1

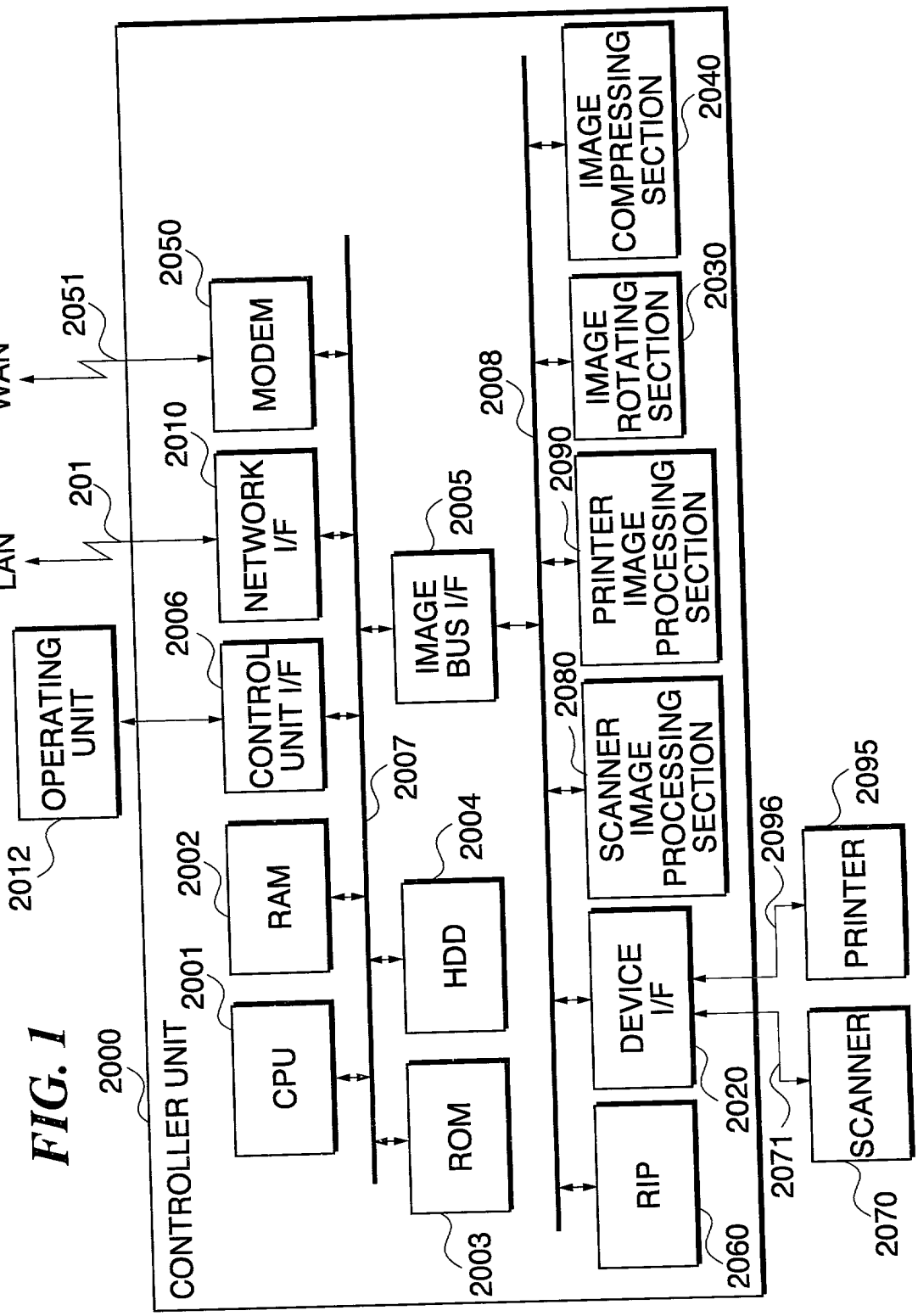

CONTROLLER UNIT
2000
CPU
2001
RAM
2002
ROM
2003
HDD
2004
IMAGE BUS I/F
2005
CONTROL UNIT I/F
2006
2007
NETWORK I/F
2010
MODEM
2050
2051
WAN
LAN
201
OPERATING UNIT
2012
2008
SCANNER IMAGE PROCESSING SECTION
2080
PRINTER IMAGE PROCESSING SECTION
2090
IMAGE ROTATING SECTION
2030
IMAGE COMPRESSING SECTION
2040
DEVICE I/F
2020
RIP
2060
2096
2071
SCANNER
2070
PRINTER
2095

FIG. 2

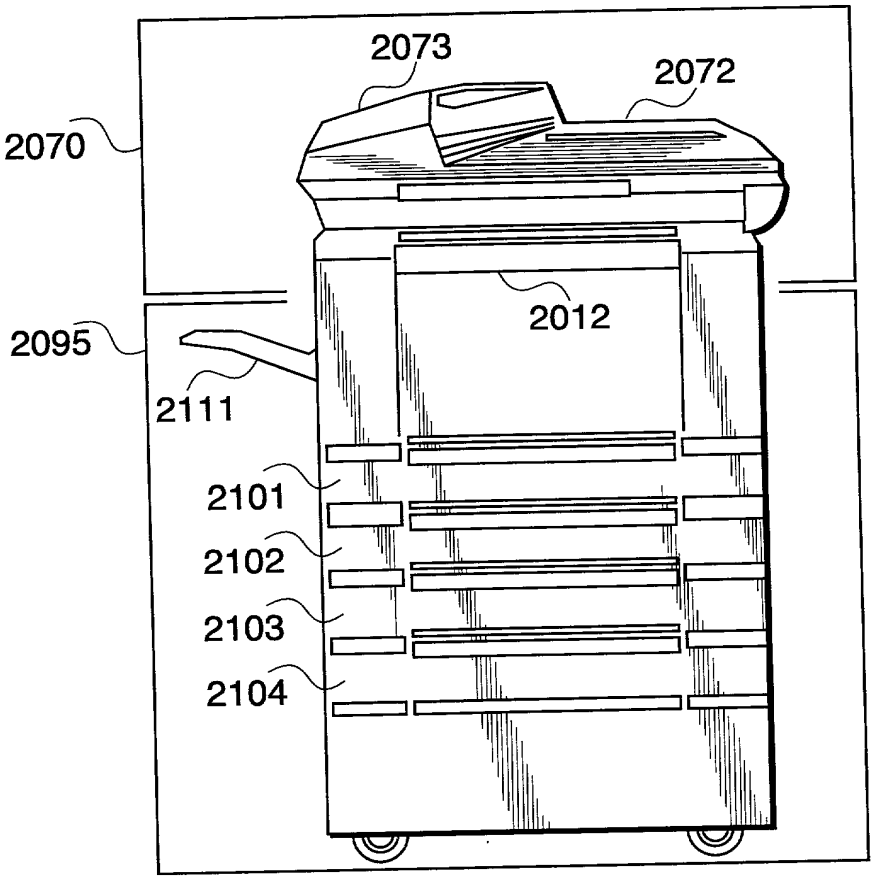


FIG. 3

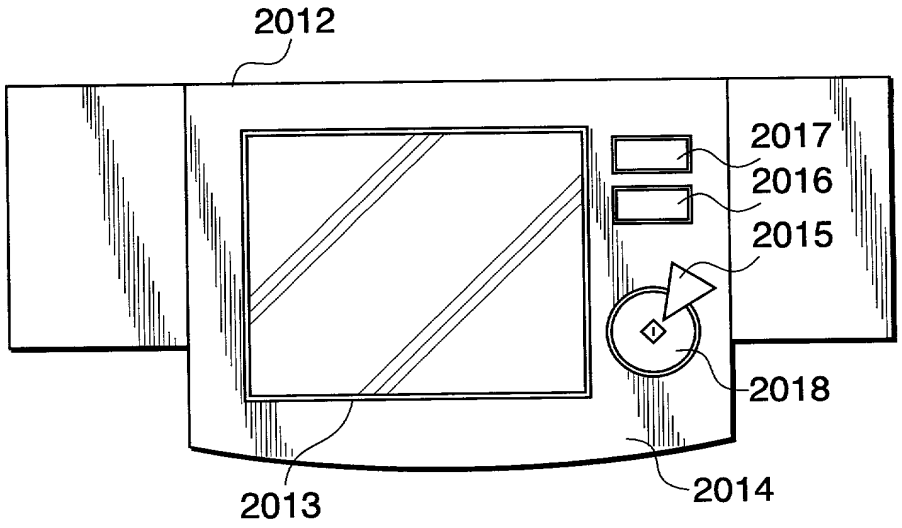


FIG. 4

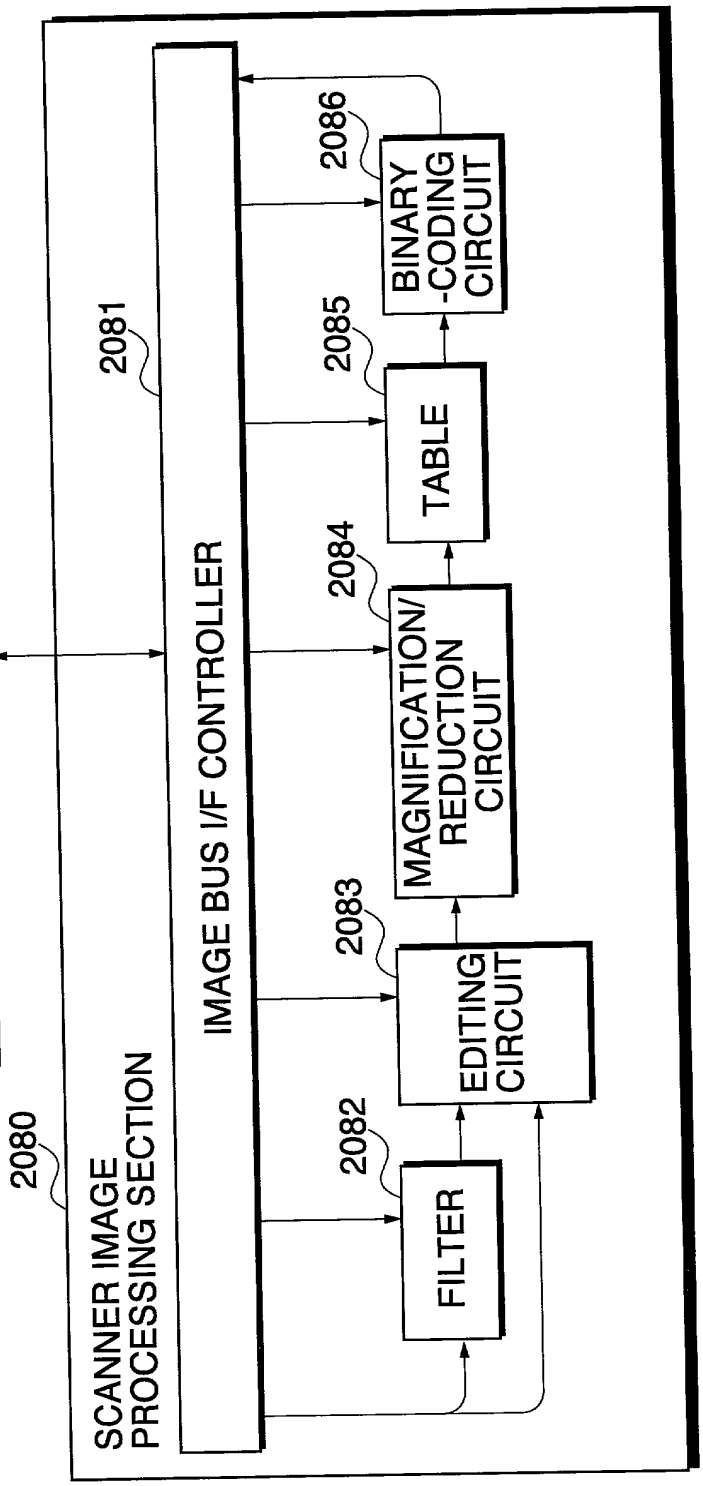

2008
2080
SCANNER IMAGE PROCESSING SECTION
2081
IMAGE BUS I/F CONTROLLER
2082
FILTER
2083
EDITING CIRCUIT
2084
MAGNIFICATION/ REDUCTION CIRCUIT
2085
TABLE
2086
BINARY -CODING CIRCUIT

FIG. 5

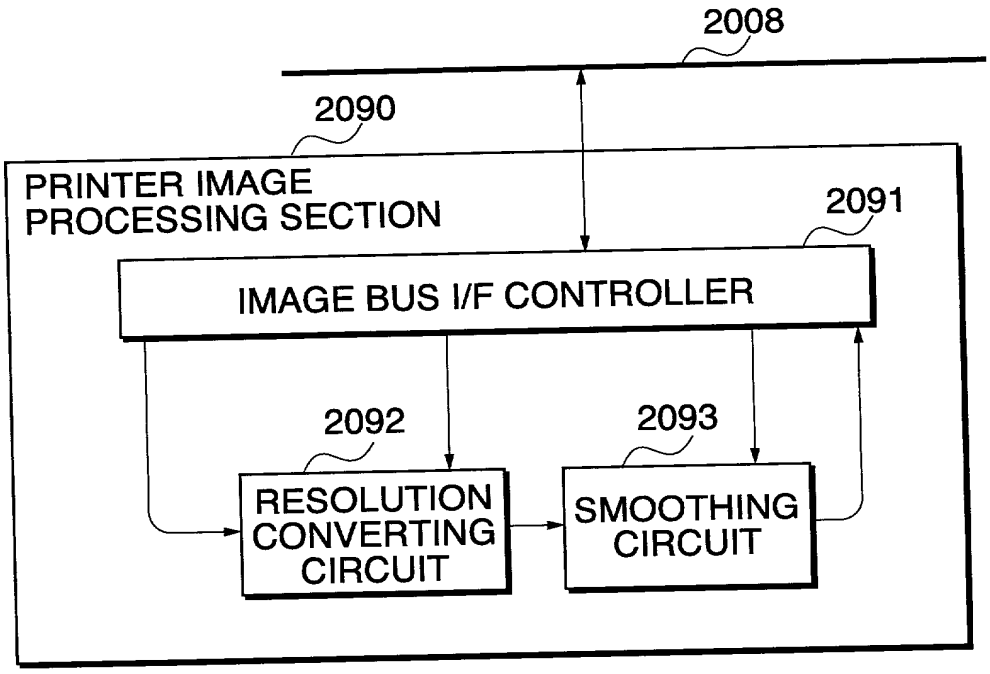

2008
2090
PRINTER IMAGE PROCESSING SECTION
2091
IMAGE BUS I/F CONTROLLER
2092
2093
RESOLUTION CONVERTING CIRCUIT
SMOOTHING CIRCUIT

FIG. 6

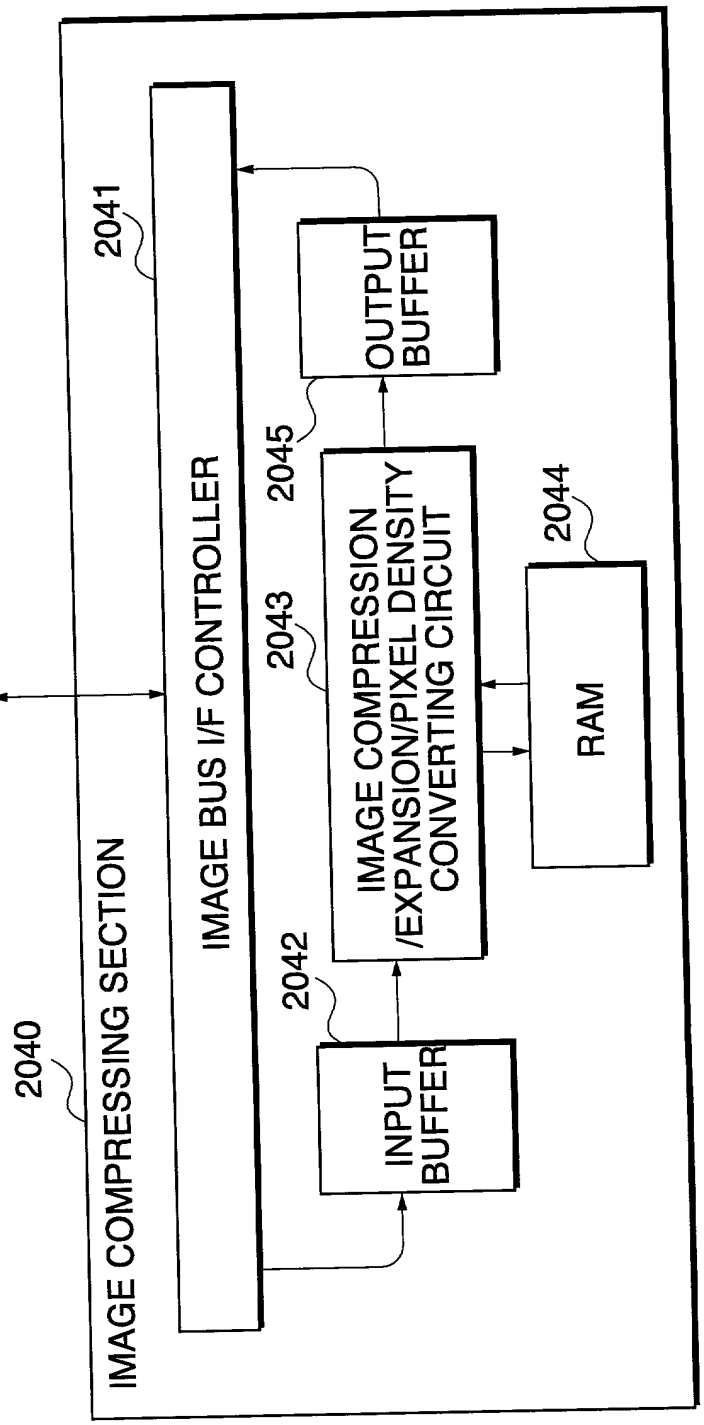

2008
2040
IMAGE COMPRESSING SECTION
2041
IMAGE BUS I/F CONTROLLER
2042
INPUT BUFFER
2043
IMAGE COMPRESSION /EXPANSION/PIXEL DENSITY CONVERTING CIRCUIT
2044
RAM
2045
OUTPUT BUFFER

FIG. 7

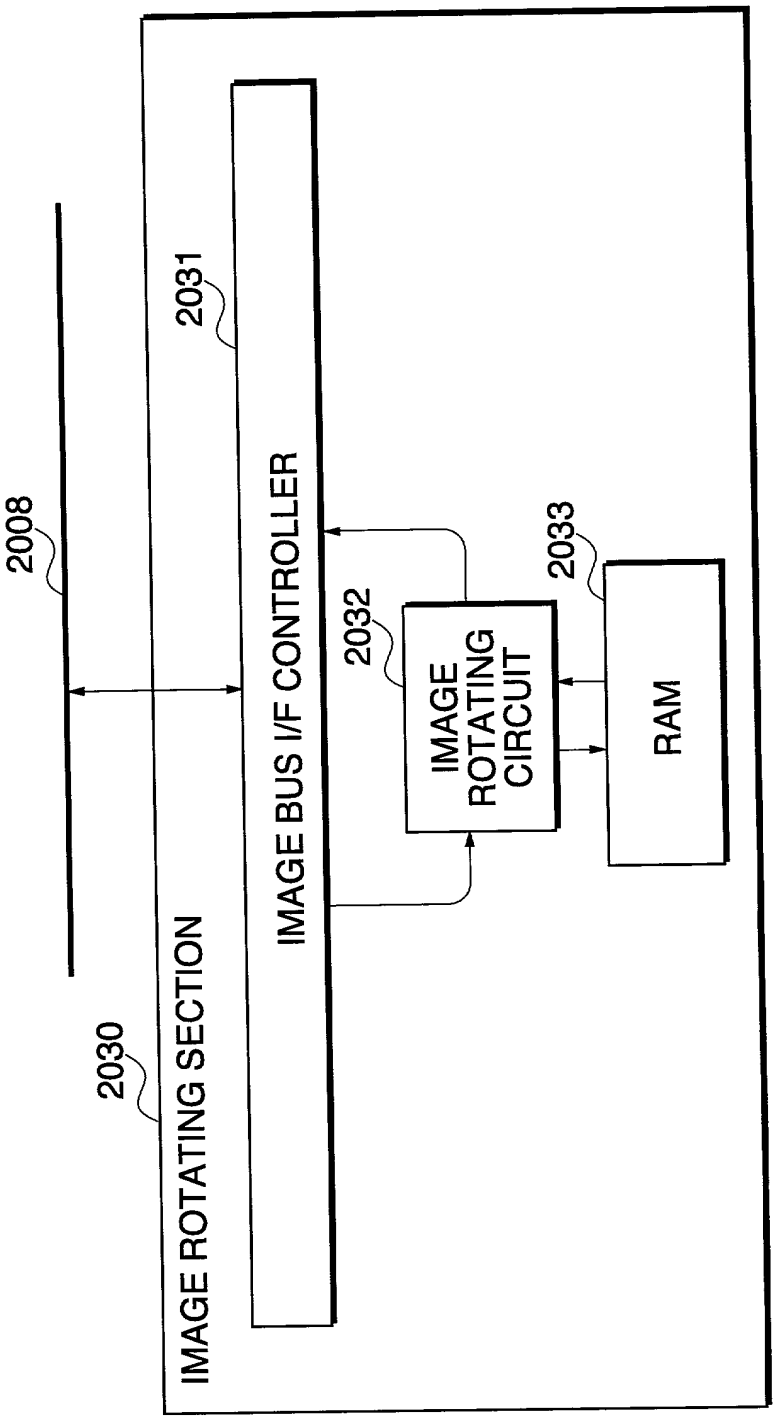

2008
2031
2030
IMAGE ROTATING SECTION
IMAGE BUS I/F CONTROLLER
2032
IMAGE ROTATING CIRCUIT
2033
RAM

FIG. 8

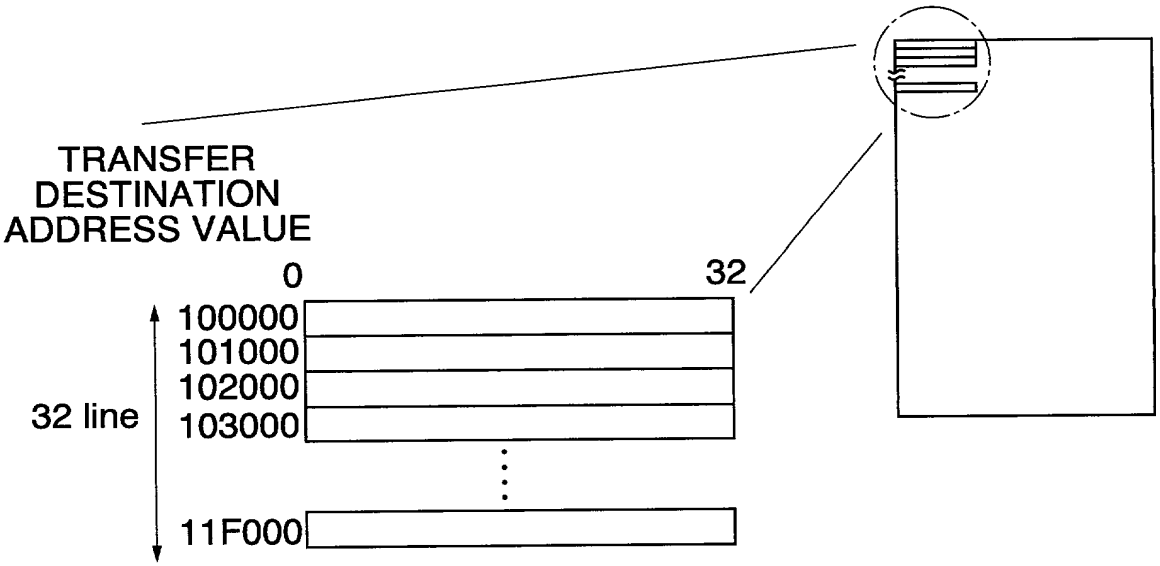

TRANSFER
DESTINATION
ADDRESS VALUE
0
32
100000
101000
102000
103000
32 line
11F000

FIG. 9

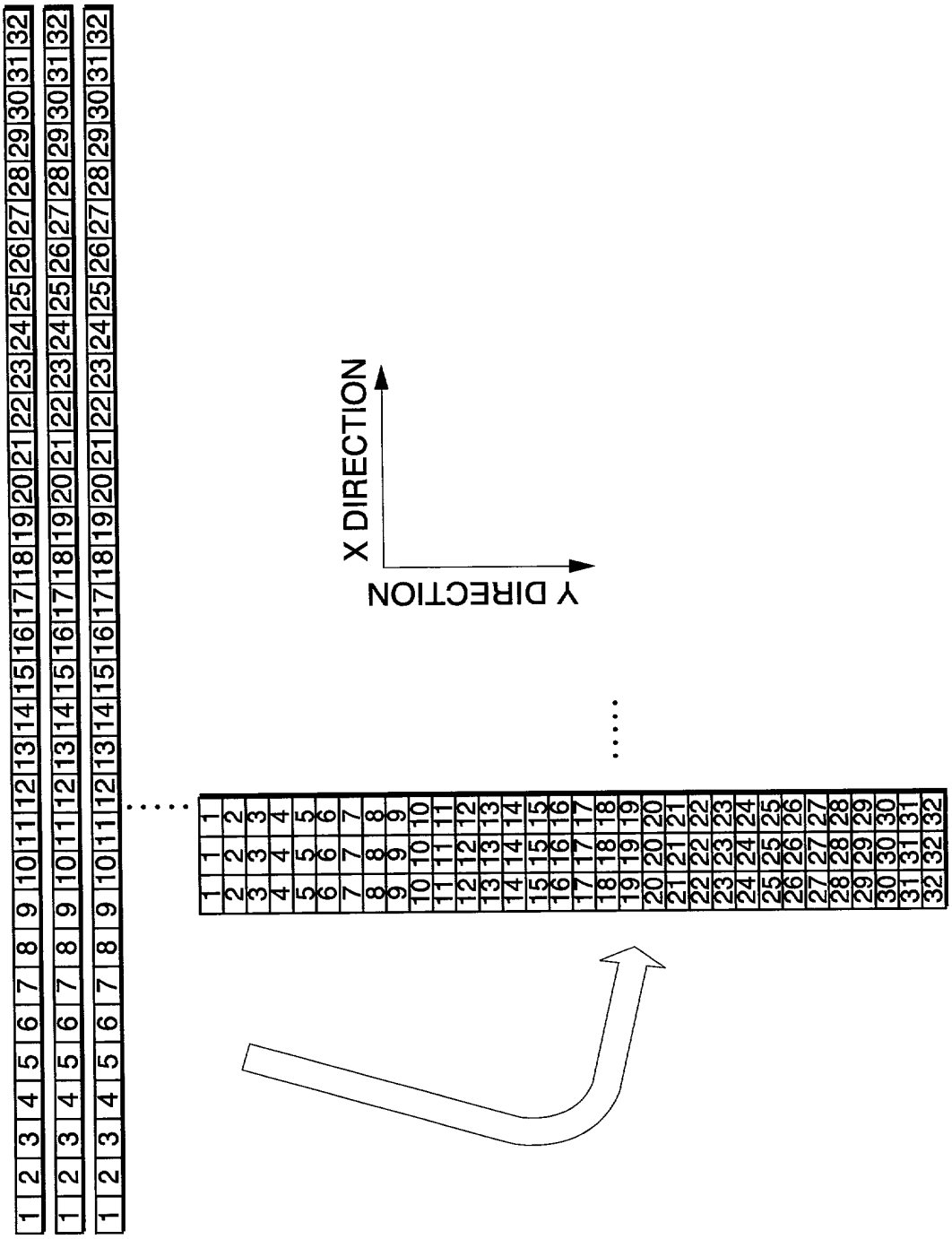

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
X DIRECTION
Y DIRECTION

FIG. 10

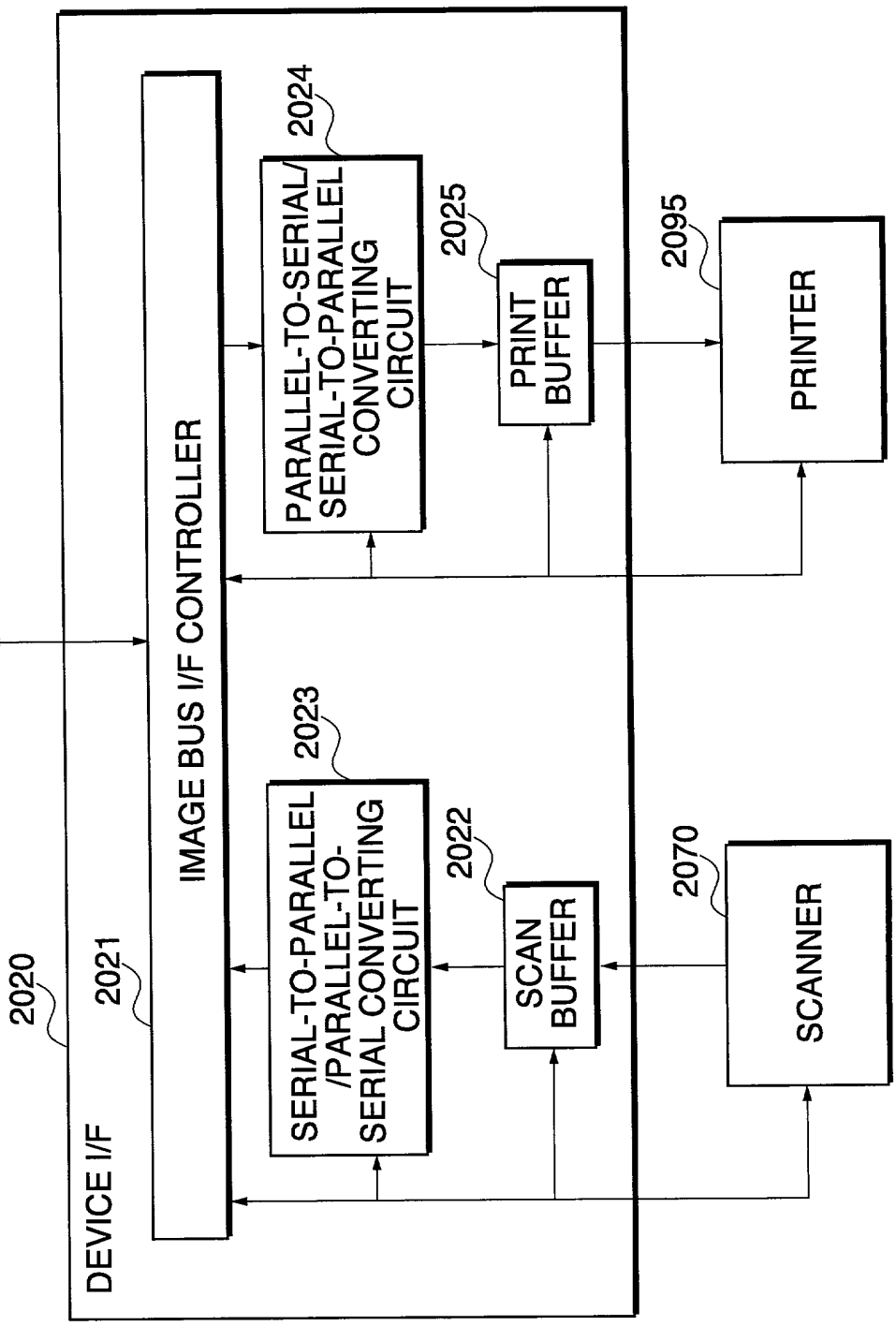

2008
DEVICE I/F
2020
2021
IMAGE BUS I/F CONTROLLER
SERIAL-TO-PARALLEL /PARALLEL-TO-SERIAL CONVERTING CIRCUIT
2023
SCAN BUFFER
2022
SCANNER
2070
PARALLEL-TO-SERIAL/ SERIAL-TO-PARALLEL CONVERTING CIRCUIT
2024
PRINT BUFFER
2025
PRINTER
2095

FIG. 11

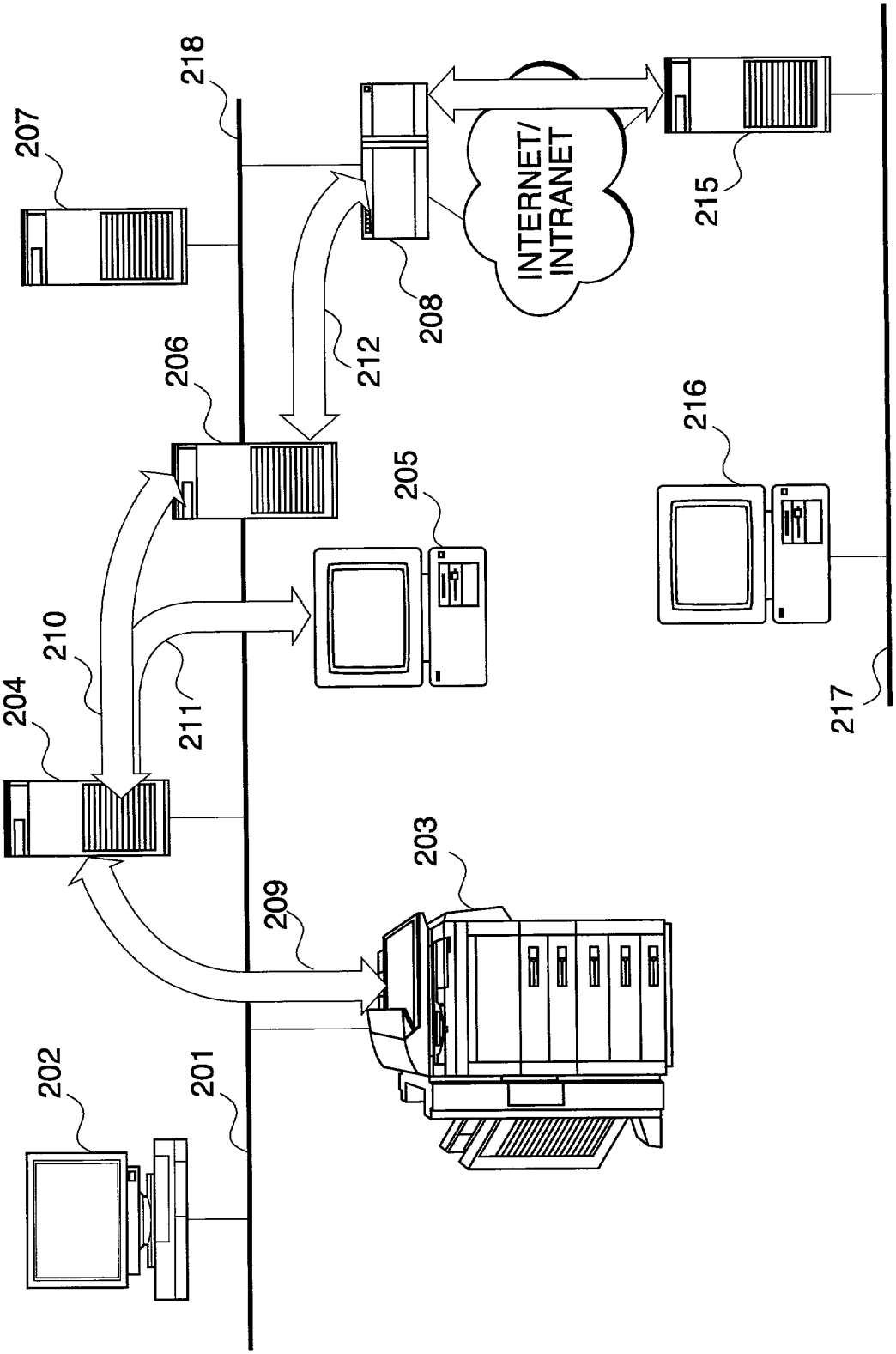
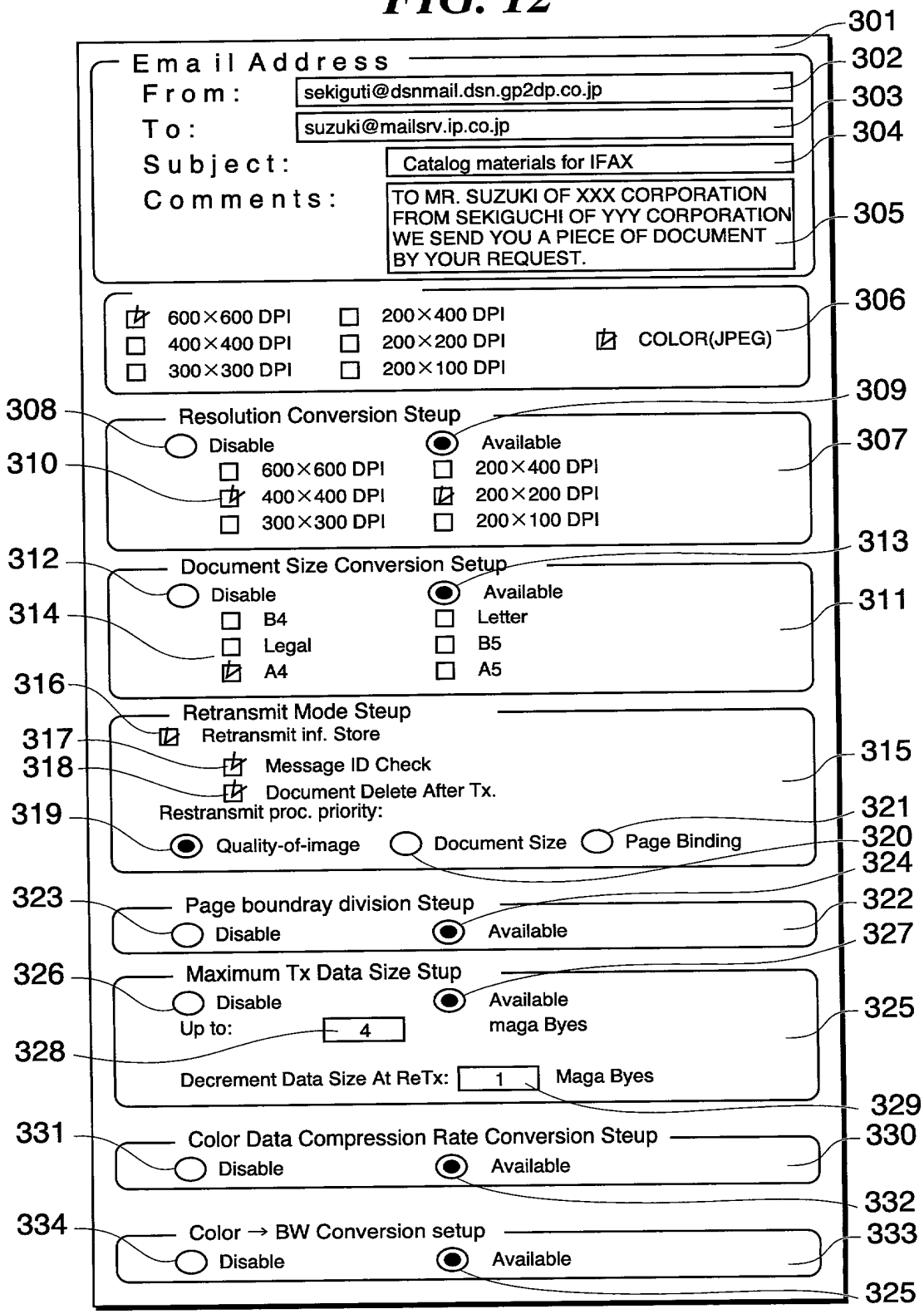

INTERNET/
INTRANET
201
202
203
204
205
206
207
208
209
210
211
212
215
216
217
218

FIG. 12


301
Email Address
From:
sekiguti@dsnmail.dsn.gp2dp.co.jp
302
To:
suzuki@mailsrv.ip.co.jp
303
Subject:
Catalog materials for IFAX
304
Comments:
TO MR. SUZUKI OF XXX CORPORATION
FROM SEKIGUCHI OF YYY CORPORATION
WE SEND YOU A PIECE OF DOCUMENT
BY YOUR REQUEST.
305
600×600 DPI
400×400 DPI
300×300 DPI
200×400 DPI
200×200 DPI
200×100 DPI
COLOR(JPEG)
306
308
Resolution Conversion Steup
Disable
Available
309
310
600×600 DPI
400×400 DPI
300×300 DPI
200×400 DPI
200×200 DPI
200×100 DPI
307
312
Document Size Conversion Setup
Disable
Available
313
314
B4
Legal
A4
Letter
B5
A5
311
316
Retransmit Mode Steup
Retransmit inf. Store
317
Message ID Check
318
Document Delete After Tx.
315
319
Restransmit proc. priority:
Quality-of-image
Document Size
Page Binding
321
320
324
323
Page boundray division Steup
Disable
Available
322
327
326
Maximum Tx Data Size Stup
Disable
Available
325
Up to:
4
maga Byes
328
Decrement Data Size At ReTx:
1
Maga Byes
329
331
Color Data Compression Rate Conversion Steup
Disable
Available
330
332
334
Color → BW Conversion setup
Disable
Available
333
325

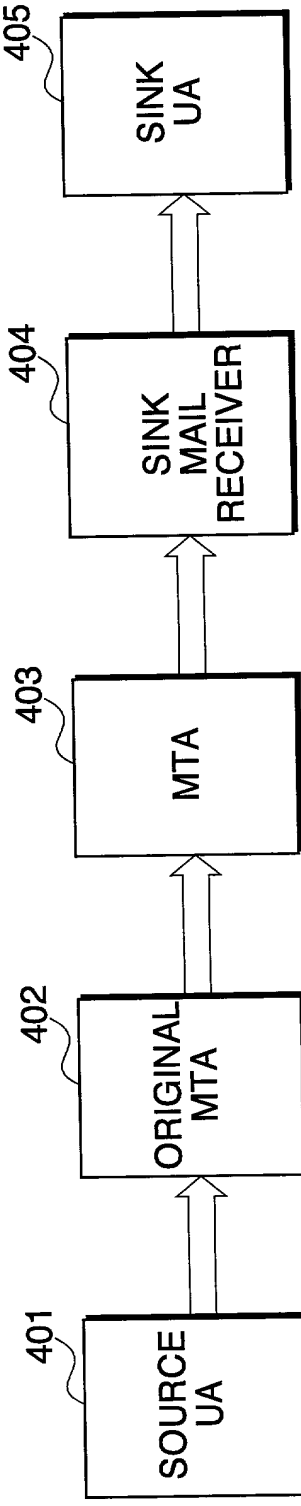
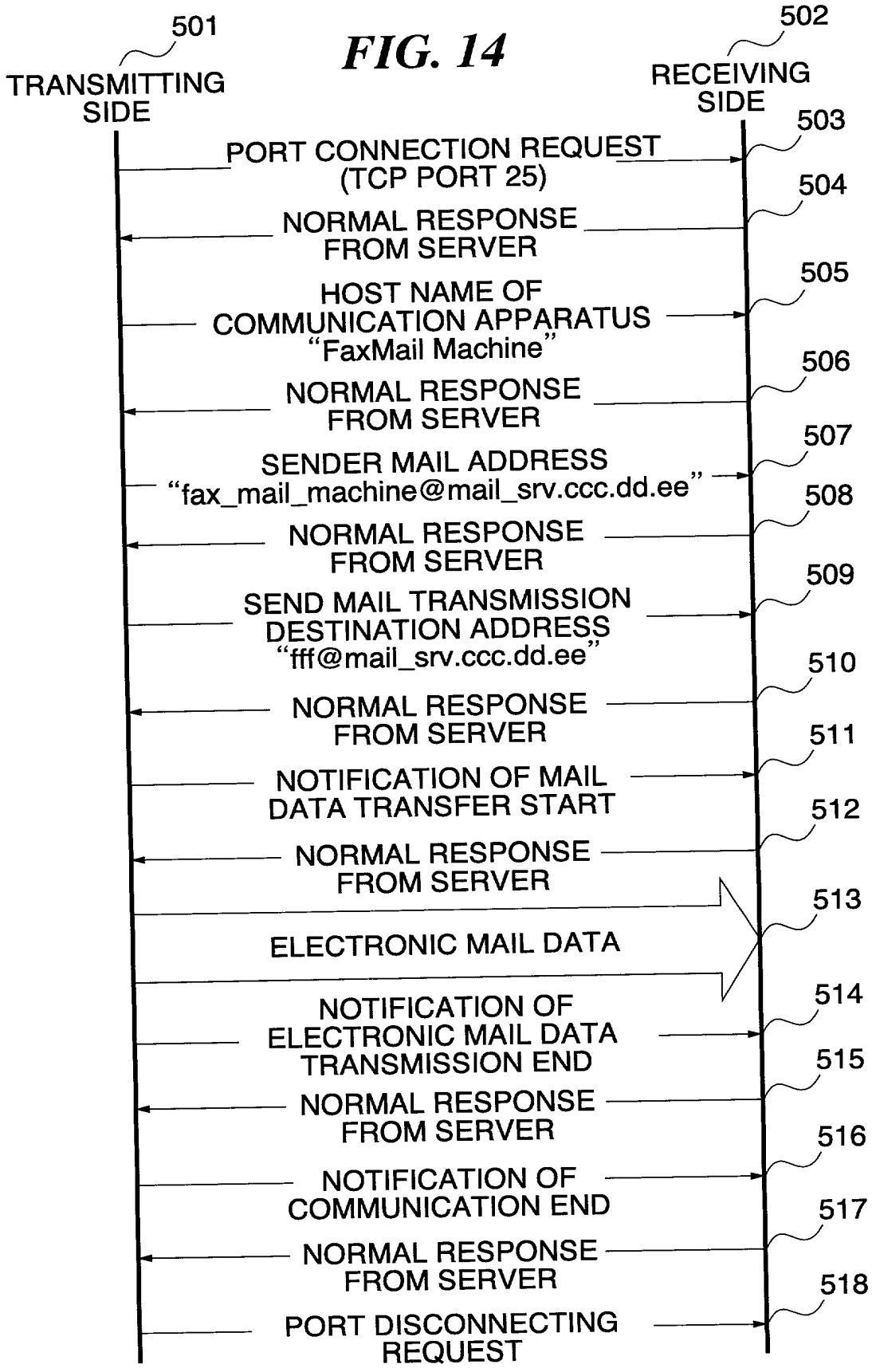

401
SOURCE UA
402
ORIGINAL MTA
403
MTA
404
SINK MAIL RECEIVER
405
SINK UA

FIG. 13

FIG. 14


501
TRANSMITTING SIDE
502
RECEIVING SIDE
503
PORT CONNECTION REQUEST (TCP PORT 25)
504
NORMAL RESPONSE FROM SERVER
505
HOST NAME OF COMMUNICATION APPARATUS "FaxMail Machine"
506
NORMAL RESPONSE FROM SERVER
507
SENDER MAIL ADDRESS "fax_mail_machine@mail_srv.ccc.dd.ee"
508
NORMAL RESPONSE FROM SERVER
509
SEND MAIL TRANSMISSION DESTINATION ADDRESS "fff@mail_srv.ccc.dd.ee"
510
NORMAL RESPONSE FROM SERVER
511
NOTIFICATION OF MAIL DATA TRANSFER START
512
NORMAL RESPONSE FROM SERVER
513
ELECTRONIC MAIL DATA
514
NOTIFICATION OF ELECTRONIC MAIL DATA TRANSMISSION END
515
NORMAL RESPONSE FROM SERVER
516
NOTIFICATION OF COMMUNICATION END
517
NORMAL RESPONSE FROM SERVER
518
PORT DISCONNECTING REQUEST

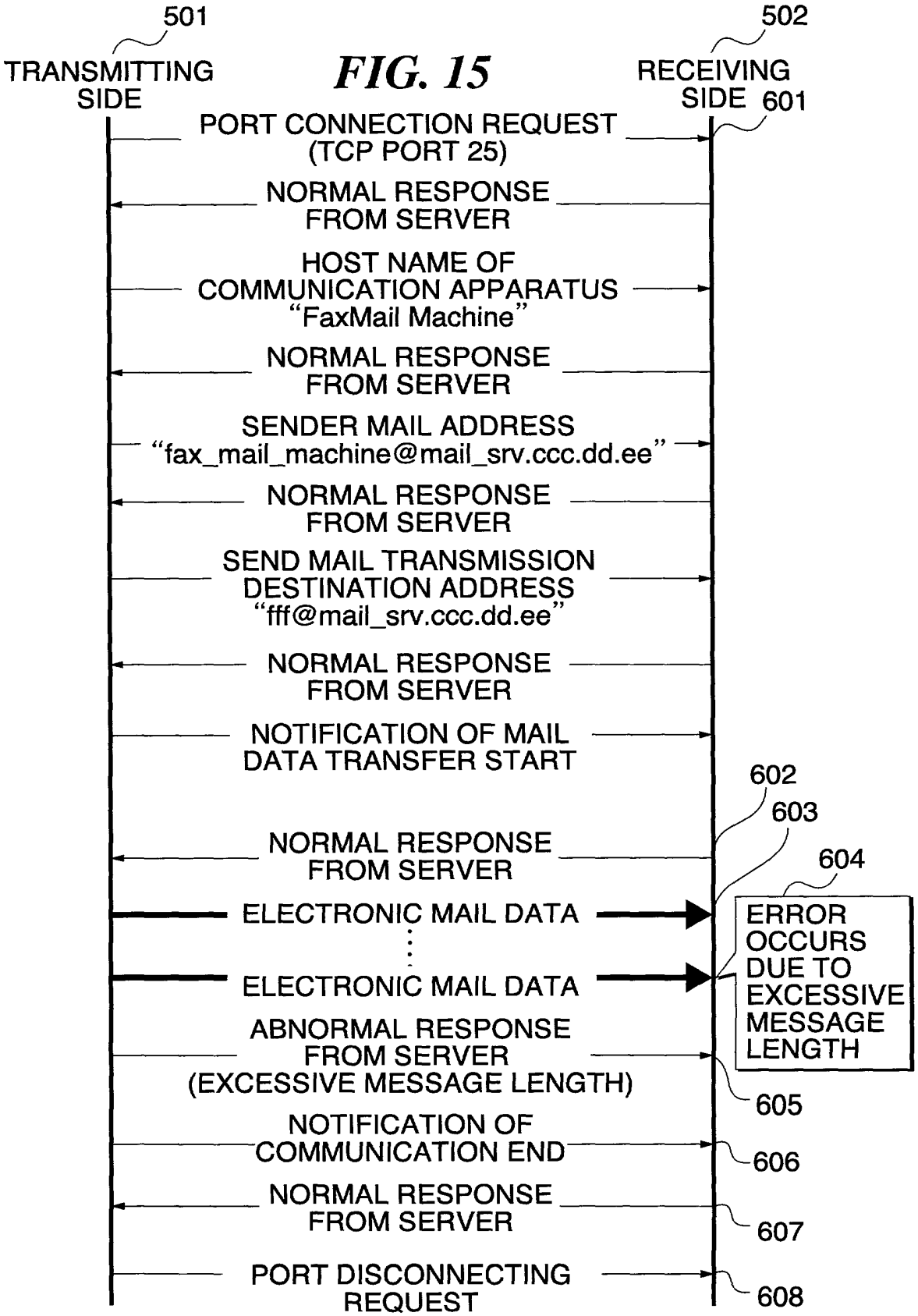

501
TRANSMITTING SIDE
502
RECEIVING SIDE
601
PORT CONNECTION REQUEST (TCP PORT 25)
NORMAL RESPONSE FROM SERVER
HOST NAME OF COMMUNICATION APPARATUS "FaxMail Machine"
NORMAL RESPONSE FROM SERVER
SENDER MAIL ADDRESS "fax_mail_machine@mail_srv.ccc.dd.ee"
NORMAL RESPONSE FROM SERVER
SEND MAIL TRANSMISSION DESTINATION ADDRESS "fff@mail_srv.ccc.dd.ee"
NORMAL RESPONSE FROM SERVER
NOTIFICATION OF MAIL DATA TRANSFER START
602
603
NORMAL RESPONSE FROM SERVER
604
ELECTRONIC MAIL DATA
ELECTRONIC MAIL DATA
ERROR OCCURS DUE TO EXCESSIVE MESSAGE LENGTH
ABNORMAL RESPONSE FROM SERVER (EXCESSIVE MESSAGE LENGTH)
605
NOTIFICATION OF COMMUNICATION END
606
NORMAL RESPONSE FROM SERVER
607
PORT DISCONNECTING REQUEST
608

FIG. 15

FIG. 16

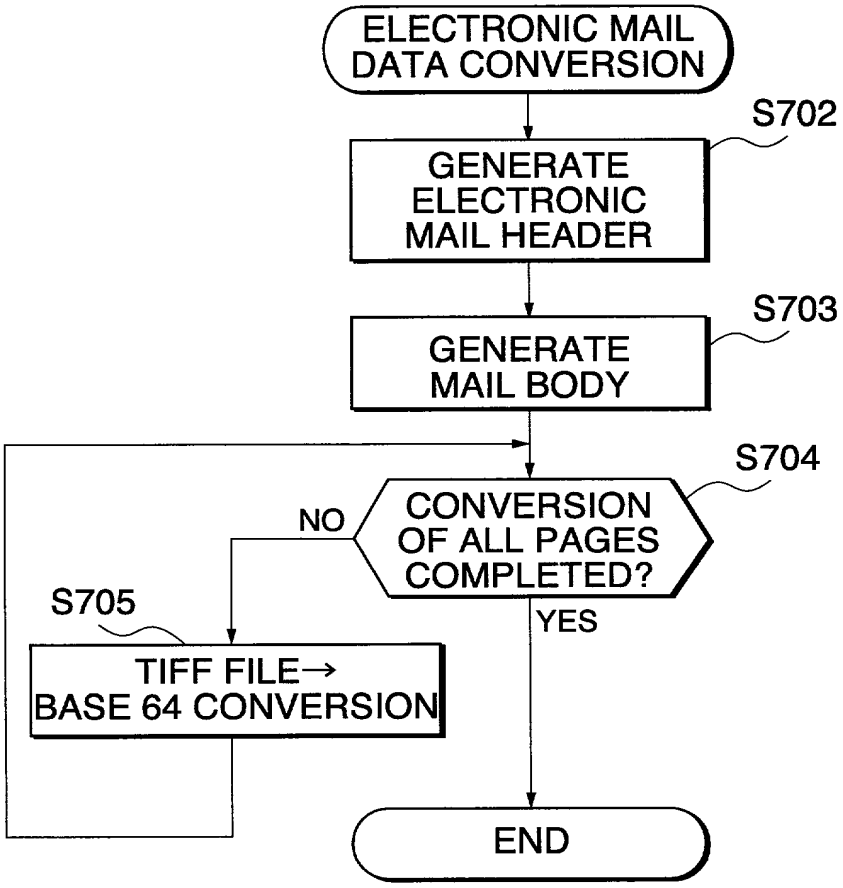

ELECTRONIC MAIL DATA CONVERSION
S702
GENERATE ELECTRONIC MAIL HEADER
S703
GENERATE MAIL BODY
S704
CONVERSION OF ALL PAGES COMPLETED?
NO
YES
S705
TIFF FILE→ BASE 64 CONVERSION
END

FIG. 17

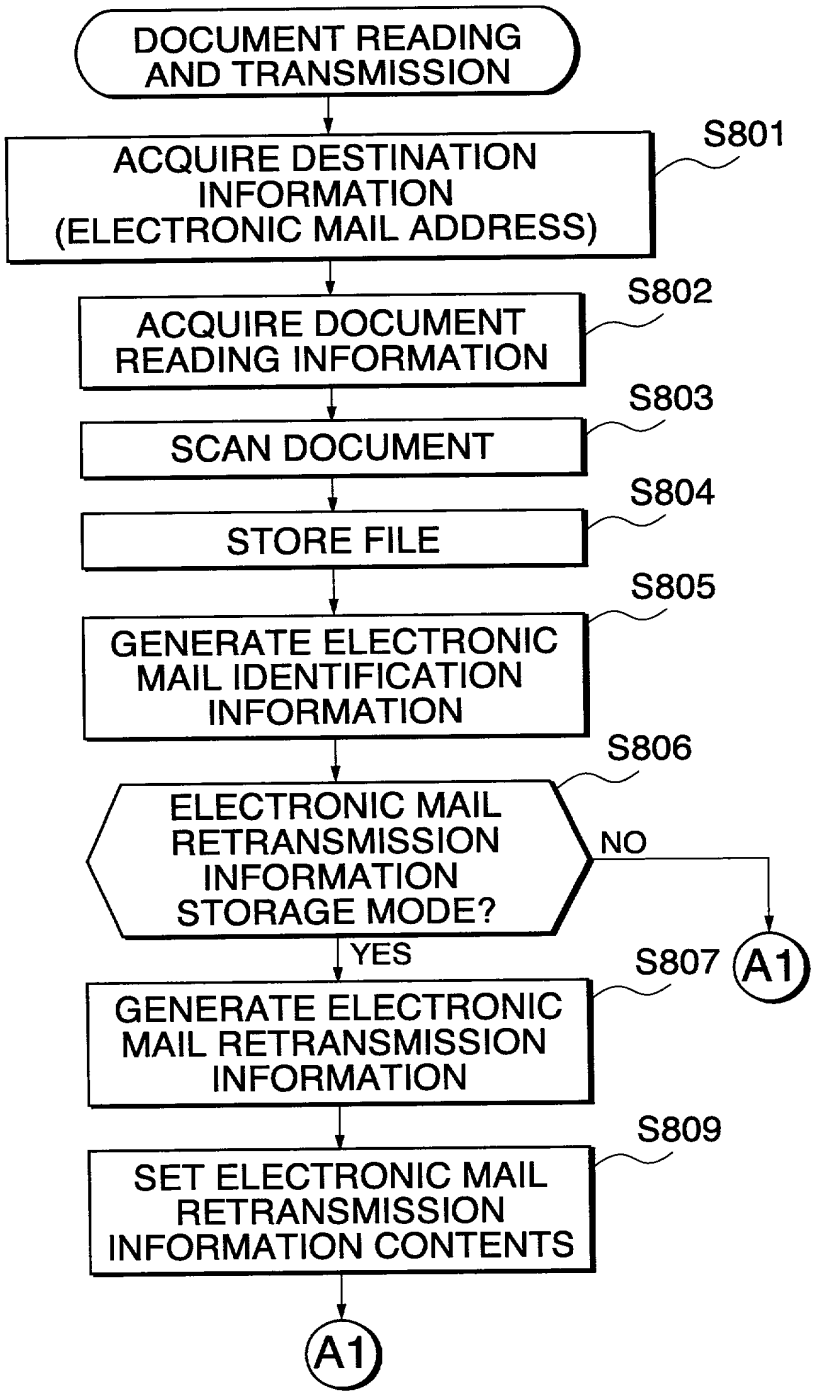

DOCUMENT READING AND TRANSMISSION
ACQUIRE DESTINATION INFORMATION (ELECTRONIC MAIL ADDRESS)
S801
ACQUIRE DOCUMENT READING INFORMATION
S802
SCAN DOCUMENT
S803
STORE FILE
S804
GENERATE ELECTRONIC MAIL IDENTIFICATION INFORMATION
S805
ELECTRONIC MAIL RETRANSMISSION INFORMATION STORAGE MODE?
S806
NO
YES
GENERATE ELECTRONIC MAIL RETRANSMISSION INFORMATION
S807
A1
SET ELECTRONIC MAIL RETRANSMISSION INFORMATION CONTENTS
S809
A1

FIG. 18

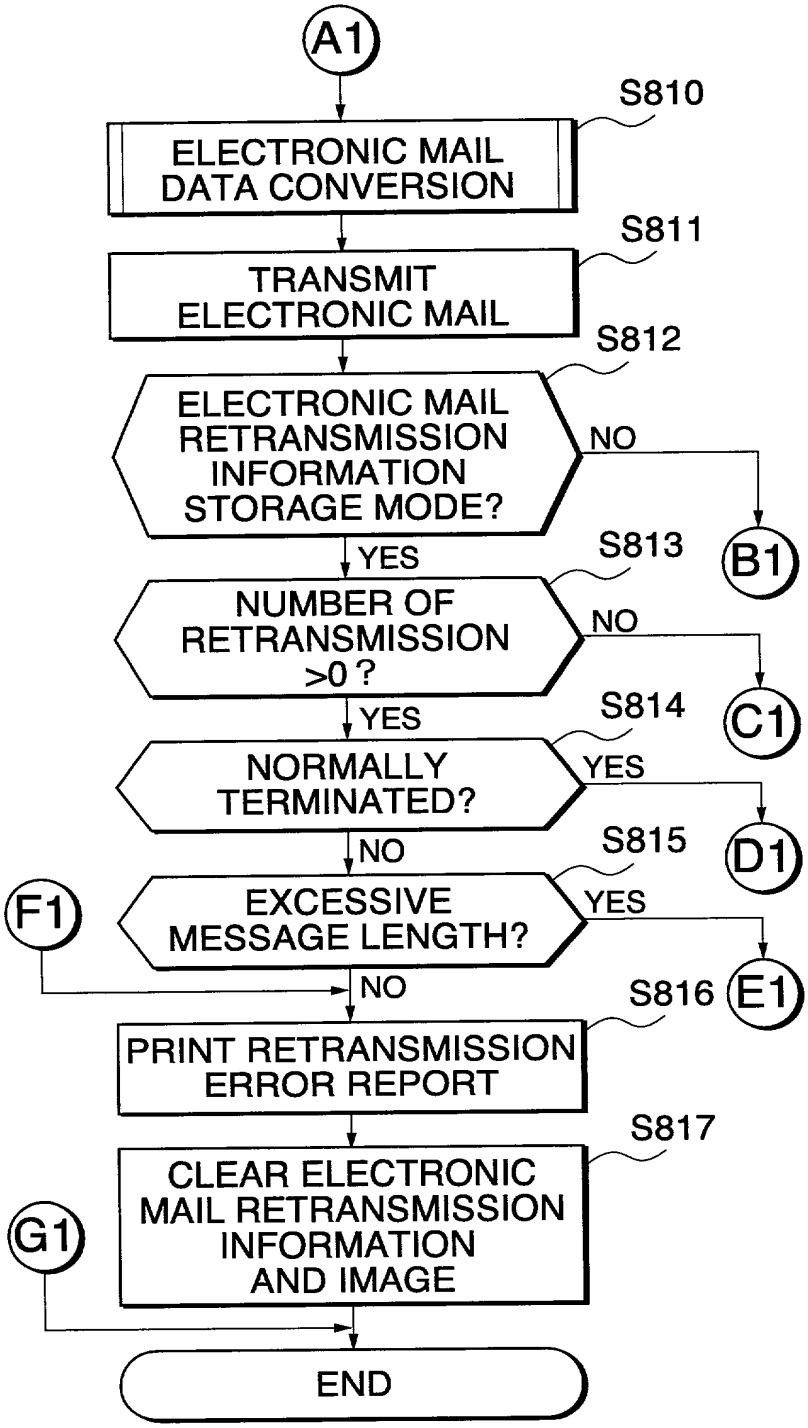

A1
S810
ELECTRONIC MAIL DATA CONVERSION
S811
TRANSMIT ELECTRONIC MAIL
S812
ELECTRONIC MAIL RETRANSMISSION INFORMATION STORAGE MODE?
NO
B1
YES
S813
NUMBER OF RETRANSMISSION >0 ?
NO
C1
YES
S814
NORMALLY TERMINATED?
YES
D1
NO
S815
EXCESSIVE MESSAGE LENGTH?
YES
E1
F1
NO
S816
PRINT RETRANSMISSION ERROR REPORT
S817
CLEAR ELECTRONIC MAIL RETRANSMISSION INFORMATION AND IMAGE
G1
END

FIG. 19

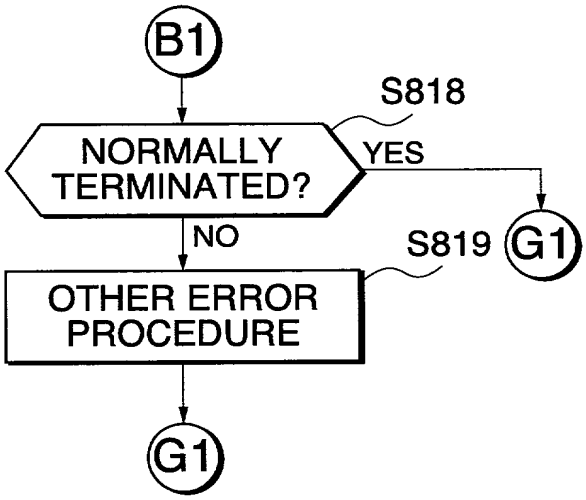

B1
S818
NORMALLY TERMINATED?
YES
NO
S819
G1
OTHER ERROR PROCEDURE
G1

FIG. 20A

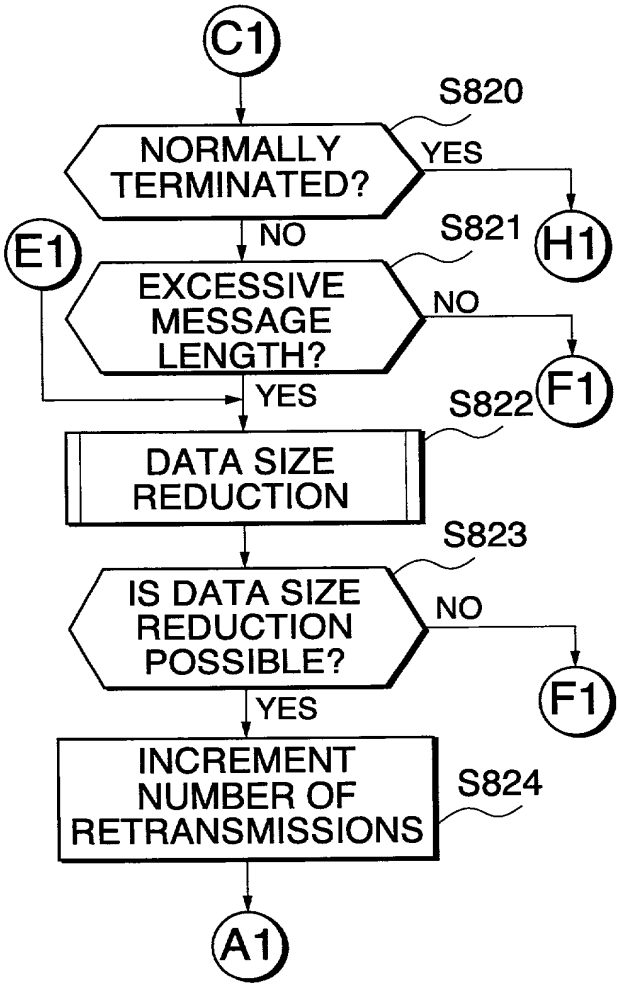


FIG. 20B

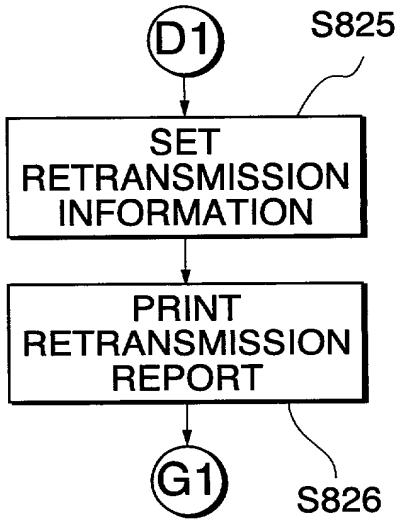


FIG. 20C

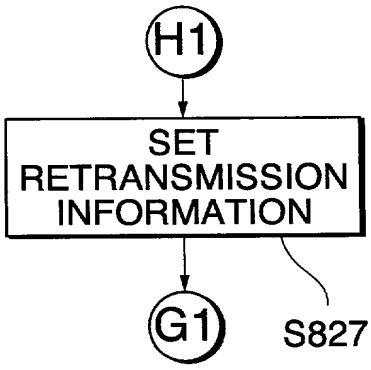


FIG. 21

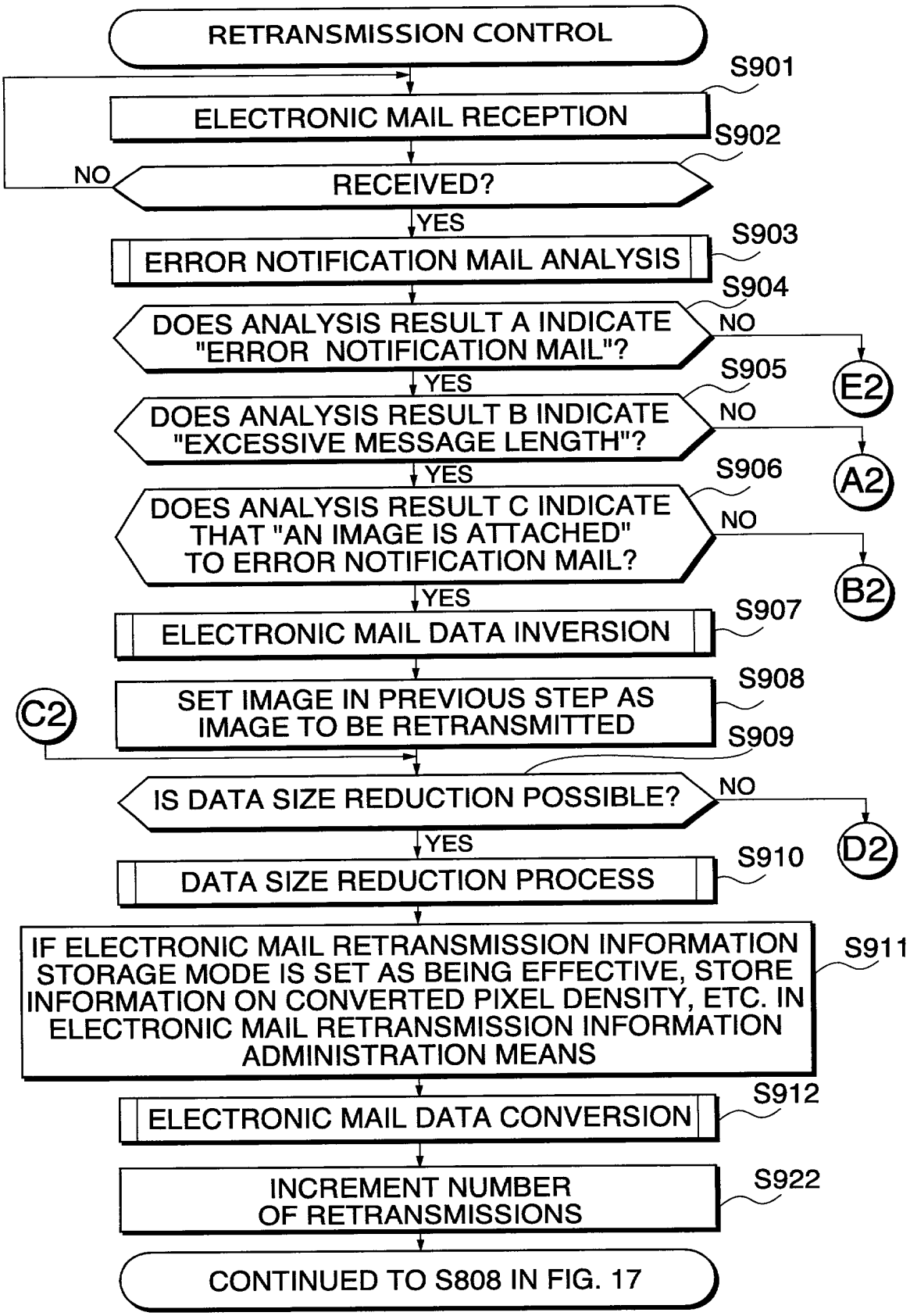

RETRANSMISSION CONTROL
S901
ELECTRONIC MAIL RECEPTION
S902
NO
RECEIVED?
YES
S903
ERROR NOTIFICATION MAIL ANALYSIS
S904
DOES ANALYSIS RESULT A INDICATE "ERROR NOTIFICATION MAIL"?
NO
E2
YES
S905
DOES ANALYSIS RESULT B INDICATE "EXCESSIVE MESSAGE LENGTH"?
NO
A2
YES
S906
DOES ANALYSIS RESULT C INDICATE THAT "AN IMAGE IS ATTACHED" TO ERROR NOTIFICATION MAIL?
NO
B2
YES
S907
ELECTRONIC MAIL DATA INVERSION
C2
S908
SET IMAGE IN PREVIOUS STEP AS IMAGE TO BE RETRANSMITTED
S909
IS DATA SIZE REDUCTION POSSIBLE?
NO
D2
YES
S910
DATA SIZE REDUCTION PROCESS
S911
IF ELECTRONIC MAIL RETRANSMISSION INFORMATION STORAGE MODE IS SET AS BEING EFFECTIVE, STORE INFORMATION ON CONVERTED PIXEL DENSITY, ETC. IN ELECTRONIC MAIL RETRANSMISSION INFORMATION ADMINISTRATION MEANS
S912
ELECTRONIC MAIL DATA CONVERSION
S922
INCREMENT NUMBER OF RETRANSMISSIONS
CONTINUED TO S808 IN FIG. 17

FIG. 22

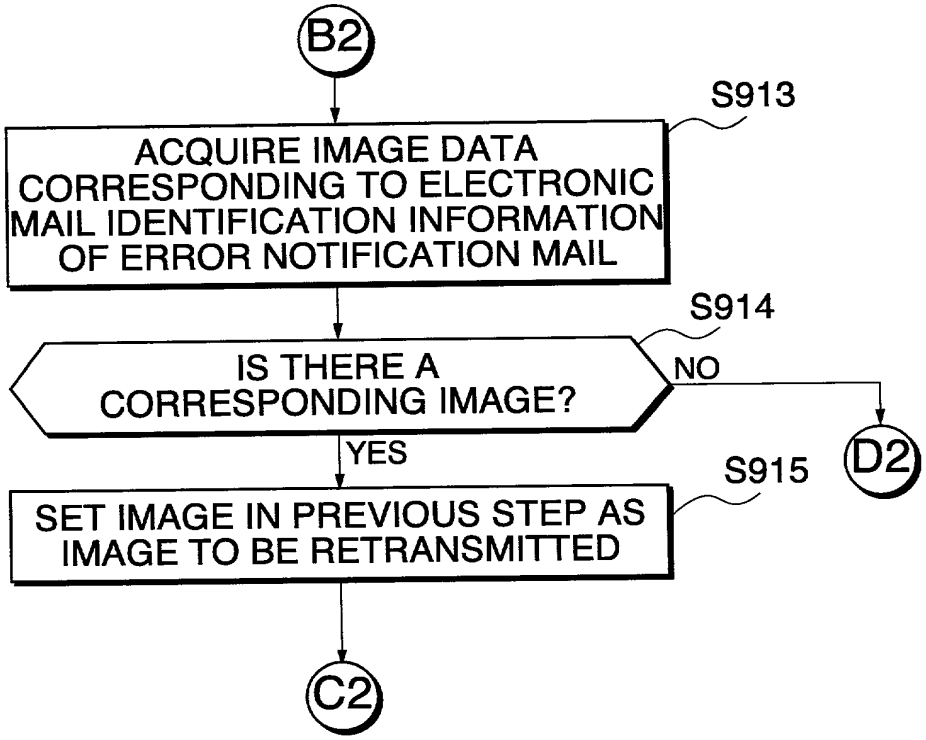

B2
S913
ACQUIRE IMAGE DATA CORRESPONDING TO ELECTRONIC MAIL IDENTIFICATION INFORMATION OF ERROR NOTIFICATION MAIL
S914
IS THERE A CORRESPONDING IMAGE?
NO
D2
YES
S915
SET IMAGE IN PREVIOUS STEP AS IMAGE TO BE RETRANSMITTED
C2

FIG. 23

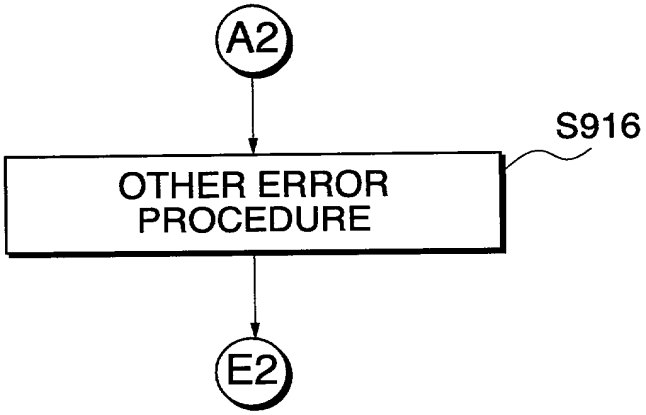

A2
S916
OTHER ERROR PROCEDURE
E2

FIG. 24

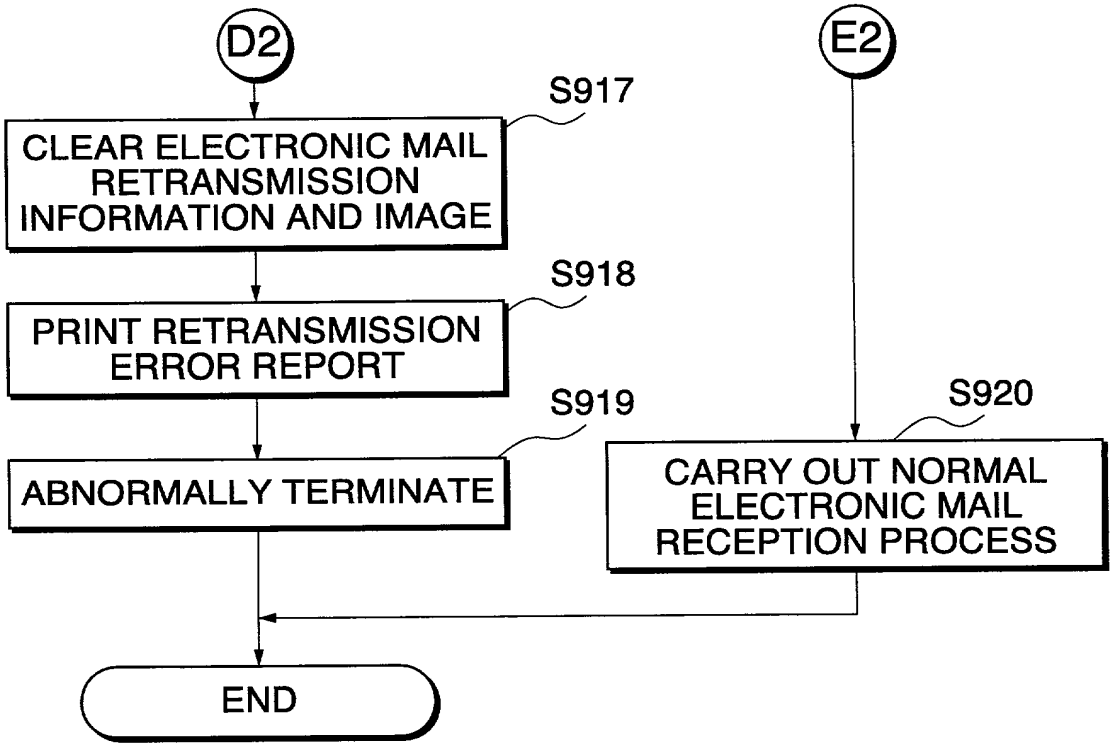

D2
E2
S917
CLEAR ELECTRONIC MAIL RETRANSMISSION INFORMATION AND IMAGE
S918
PRINT RETRANSMISSION ERROR REPORT
S919
ABNORMALLY TERMINATE
S920
CARRY OUT NORMAL ELECTRONIC MAIL RECEPTION PROCESS
END

FIG. 25

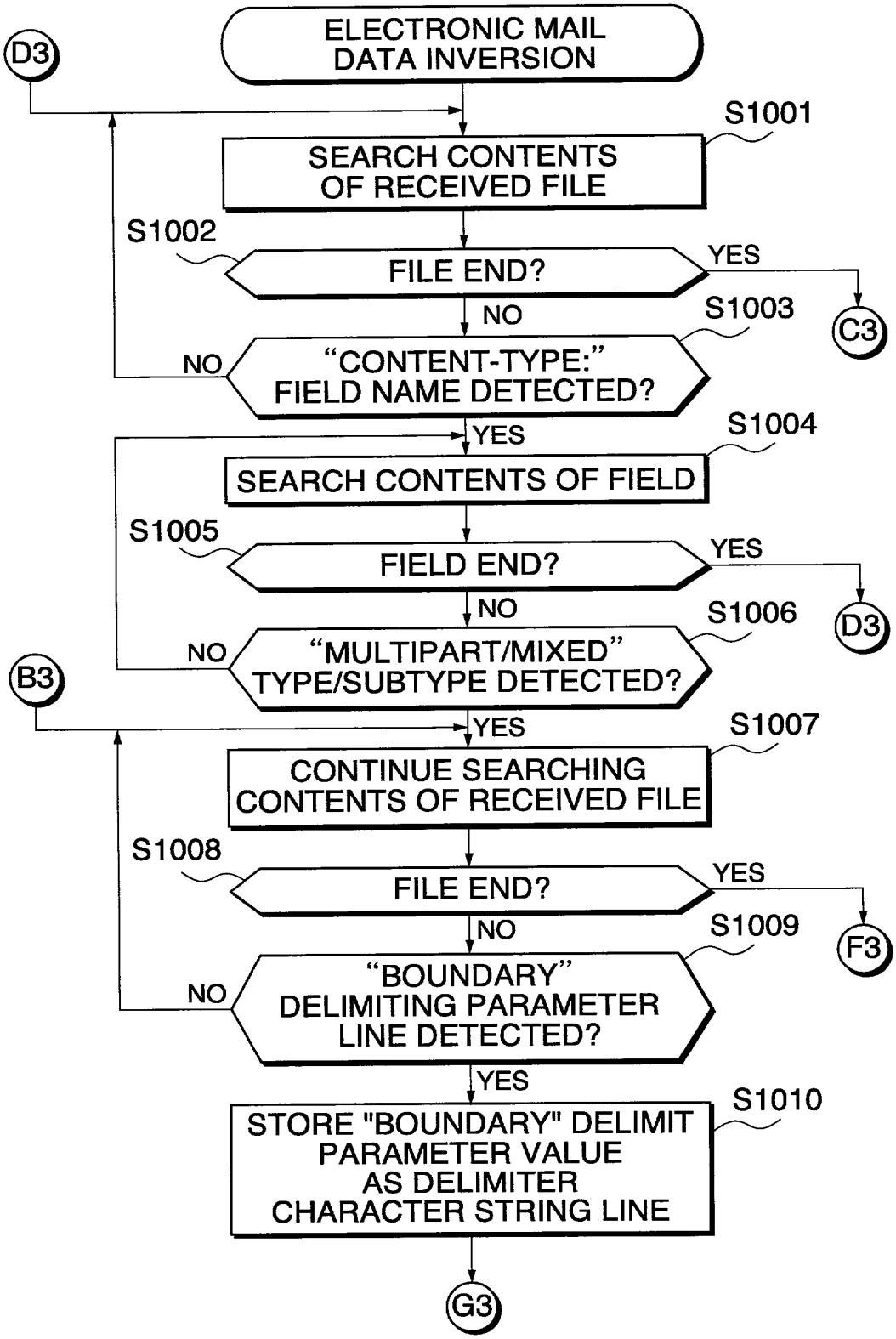

D3
ELECTRONIC MAIL DATA INVERSION
S1001
SEARCH CONTENTS OF RECEIVED FILE
S1002
FILE END?
YES
C3
NO
S1003
"CONTENT-TYPE:" FIELD NAME DETECTED?
NO
YES
S1004
SEARCH CONTENTS OF FIELD
S1005
FIELD END?
YES
D3
NO
S1006
"MULTIPART/MIXED" TYPE/SUBTYPE DETECTED?
NO
B3
YES
S1007
CONTINUE SEARCHING CONTENTS OF RECEIVED FILE
S1008
FILE END?
YES
F3
NO
S1009
"BOUNDARY" DELIMITING PARAMETER LINE DETECTED?
NO
YES
S1010
STORE "BOUNDARY" DELIMIT PARAMETER VALUE AS DELIMITER CHARACTER STRING LINE
G3

FIG. 26

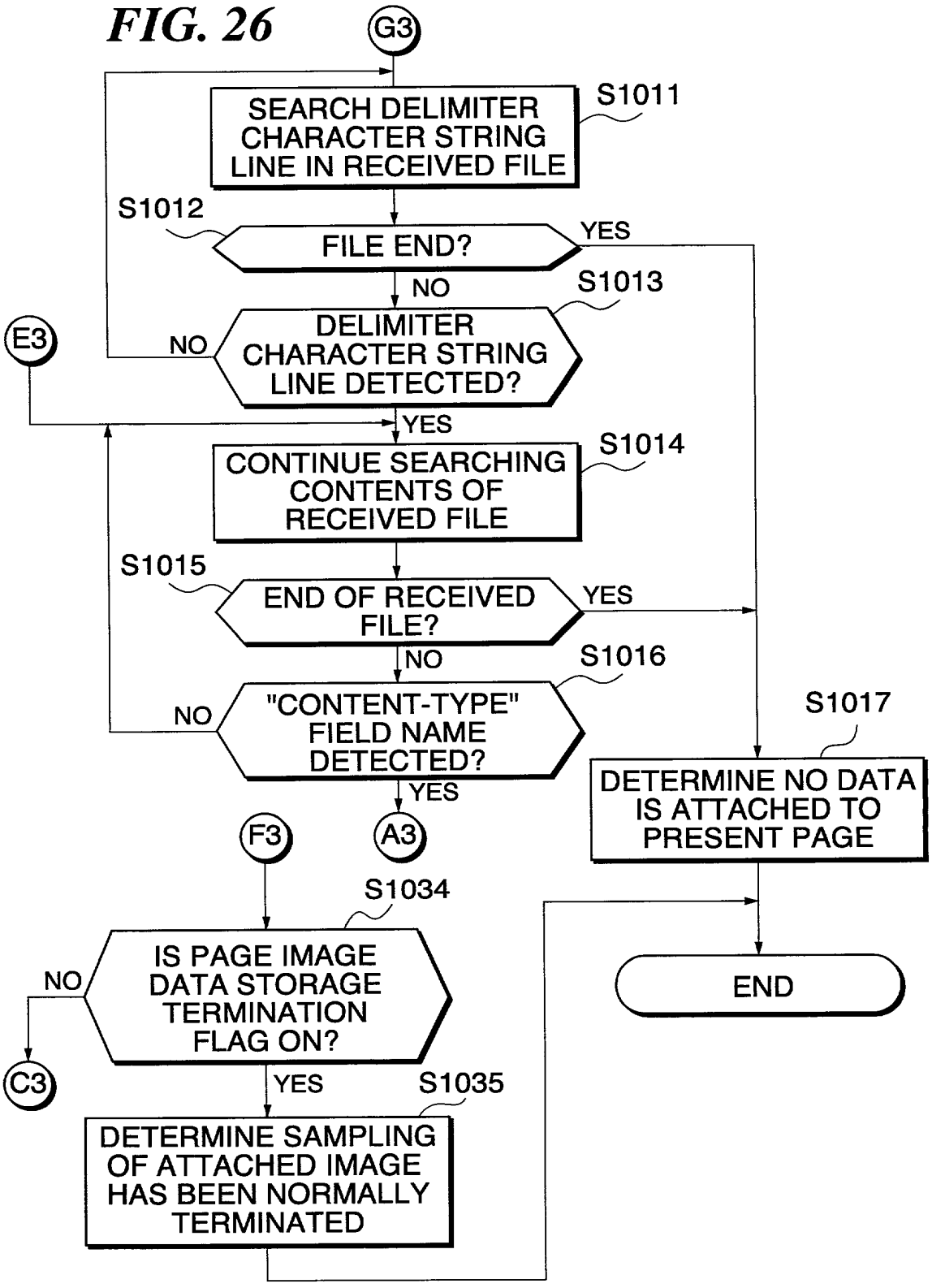

G3
SEARCH DELIMITER CHARACTER STRING LINE IN RECEIVED FILE
S1011
S1012
FILE END?
YES
NO
S1013
DELIMITER CHARACTER STRING LINE DETECTED?
NO
E3
YES
CONTINUE SEARCHING CONTENTS OF RECEIVED FILE
S1014
S1015
END OF RECEIVED FILE?
YES
NO
S1016
"CONTENT-TYPE" FIELD NAME DETECTED?
NO
YES
S1017
DETERMINE NO DATA IS ATTACHED TO PRESENT PAGE
F3
A3
S1034
IS PAGE IMAGE DATA STORAGE TERMINATION FLAG ON?
NO
C3
YES
S1035
DETERMINE SAMPLING OF ATTACHED IMAGE HAS BEEN NORMALLY TERMINATED
END

FIG. 27

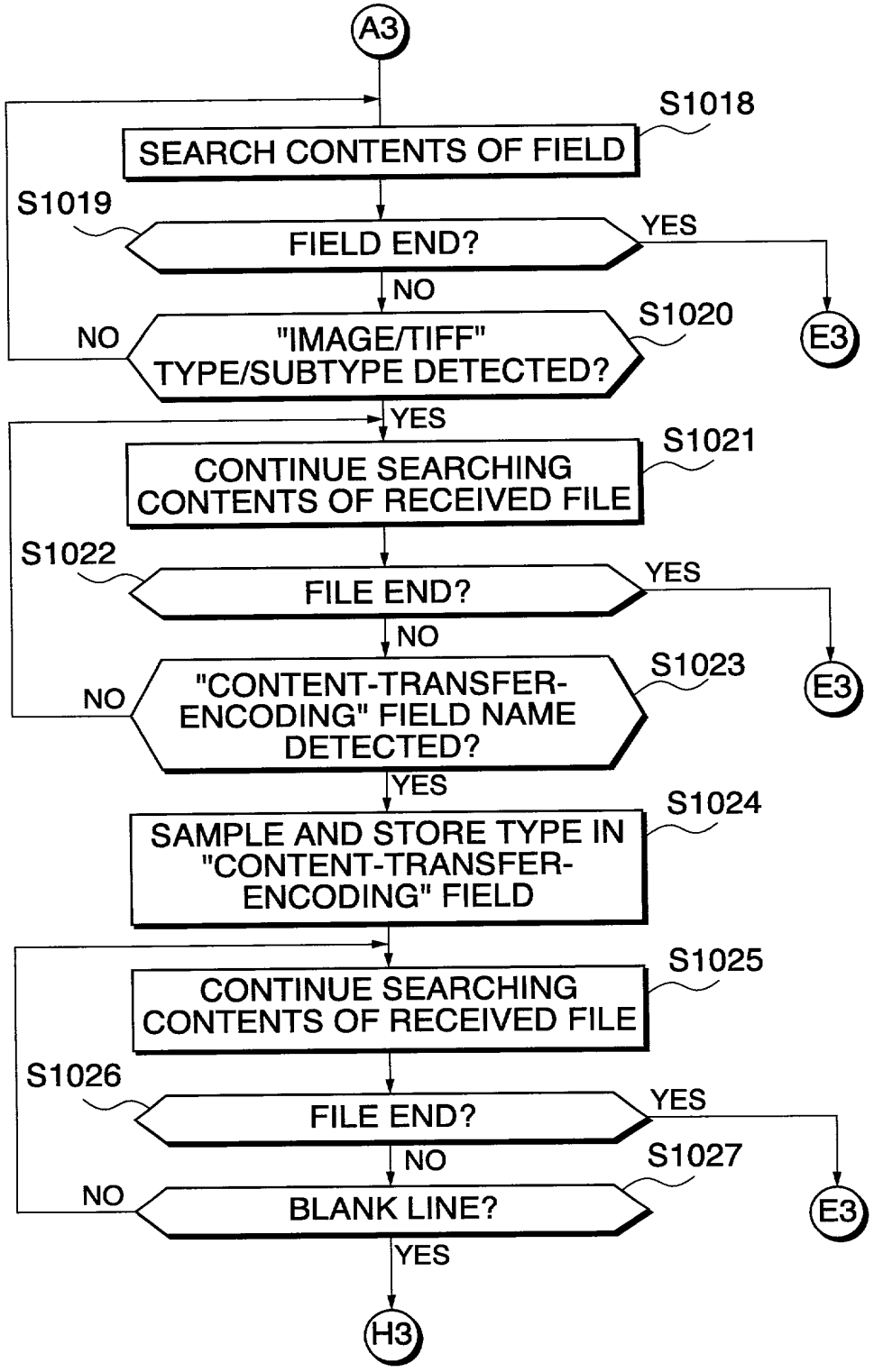

A3
S1018
SEARCH CONTENTS OF FIELD
S1019
FIELD END?
YES
NO
E3
S1020
NO
"IMAGE/TIFF" TYPE/SUBTYPE DETECTED?
YES
S1021
CONTINUE SEARCHING CONTENTS OF RECEIVED FILE
S1022
FILE END?
YES
NO
E3
S1023
NO
"CONTENT-TRANSFER-ENCODING" FIELD NAME DETECTED?
YES
S1024
SAMPLE AND STORE TYPE IN "CONTENT-TRANSFER-ENCODING" FIELD
S1025
CONTINUE SEARCHING CONTENTS OF RECEIVED FILE
S1026
FILE END?
YES
NO
S1027
NO
BLANK LINE?
E3
YES
H3

FIG. 28

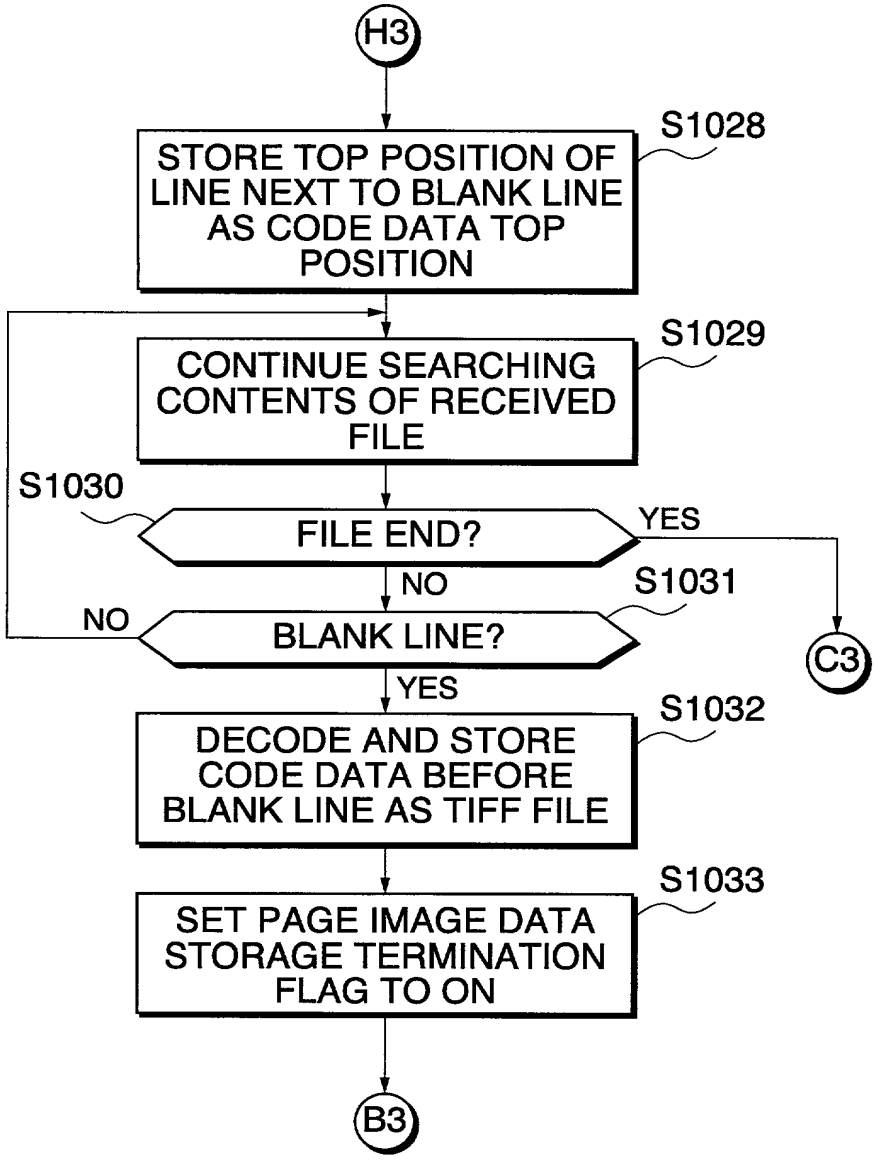

H3
S1028
STORE TOP POSITION OF LINE NEXT TO BLANK LINE AS CODE DATA TOP POSITION
S1029
CONTINUE SEARCHING CONTENTS OF RECEIVED FILE
S1030
FILE END?
YES
NO
S1031
NO
BLANK LINE?
C3
YES
S1032
DECODE AND STORE CODE DATA BEFORE BLANK LINE AS TIFF FILE
S1033
SET PAGE IMAGE DATA STORAGE TERMINATION FLAG TO ON
B3

FIG. 29

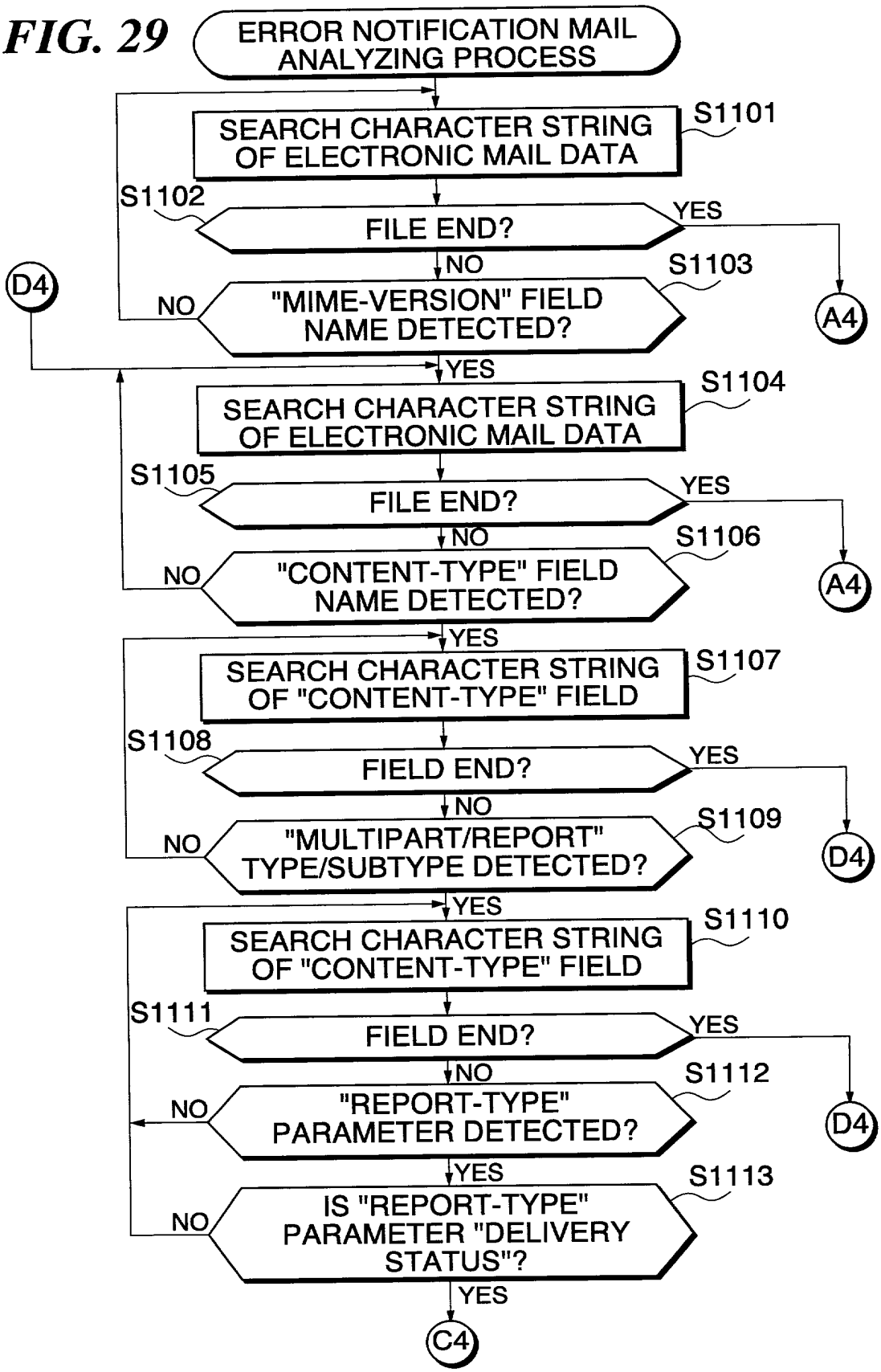

ERROR NOTIFICATION MAIL ANALYZING PROCESS
SEARCH CHARACTER STRING OF ELECTRONIC MAIL DATA
S1101
S1102
FILE END?
YES
NO
S1103
"MIME-VERSION" FIELD NAME DETECTED?
NO
YES
D4
A4
S1104
SEARCH CHARACTER STRING OF ELECTRONIC MAIL DATA
S1105
FILE END?
YES
NO
S1106
"CONTENT-TYPE" FIELD NAME DETECTED?
NO
YES
A4
S1107
SEARCH CHARACTER STRING OF "CONTENT-TYPE" FIELD
S1108
FIELD END?
YES
NO
S1109
"MULTIPART/REPORT" TYPE/SUBTYPE DETECTED?
NO
YES
D4
S1110
SEARCH CHARACTER STRING OF "CONTENT-TYPE" FIELD
S1111
FIELD END?
YES
NO
S1112
"REPORT-TYPE" PARAMETER DETECTED?
NO
YES
D4
S1113
IS "REPORT-TYPE" PARAMETER "DELIVERY STATUS"?
NO
YES
C4

FIG. 30

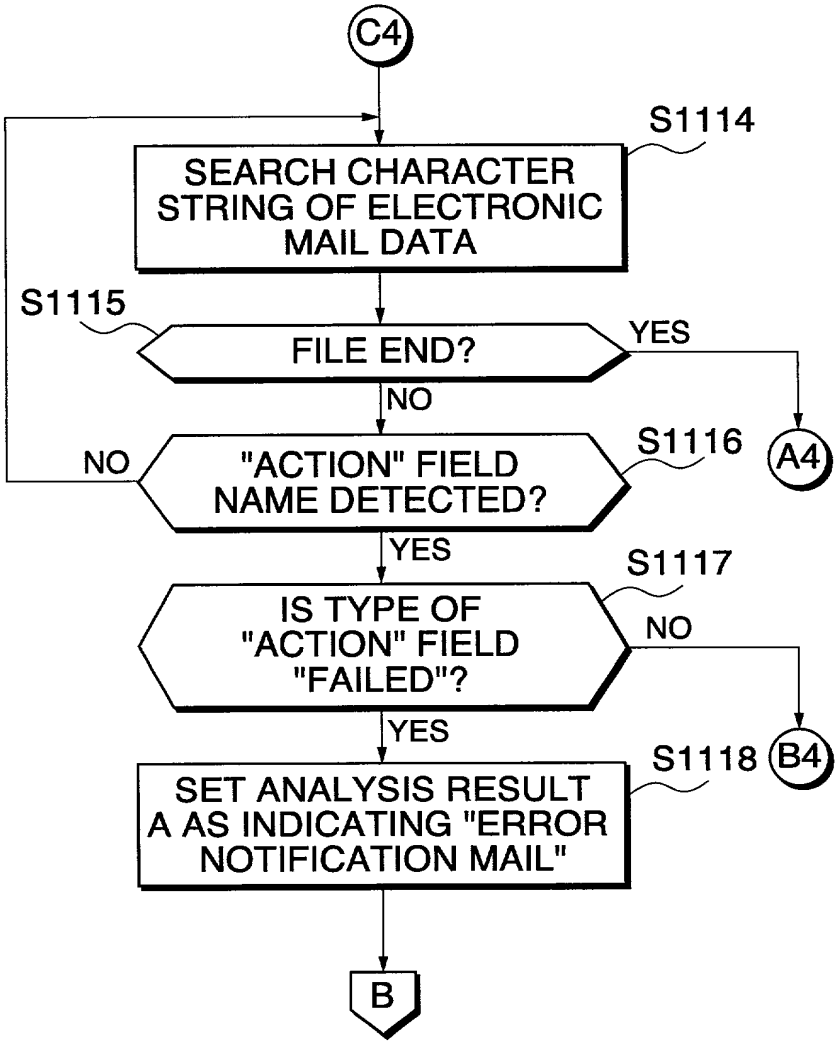

C4
S1114
SEARCH CHARACTER STRING OF ELECTRONIC MAIL DATA
S1115
FILE END?
YES
NO
A4
S1116
NO
"ACTION" FIELD NAME DETECTED?
YES
S1117
IS TYPE OF "ACTION" FIELD "FAILED"?
NO
B4
YES
S1118
SET ANALYSIS RESULT A AS INDICATING "ERROR NOTIFICATION MAIL"
B

FIG. 31

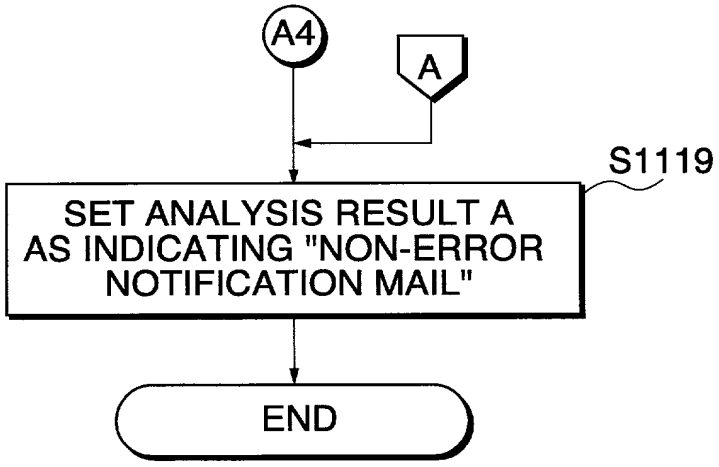

A4
A
S1119
SET ANALYSIS RESULT A AS INDICATING "NON-ERROR NOTIFICATION MAIL"
END

FIG. 32

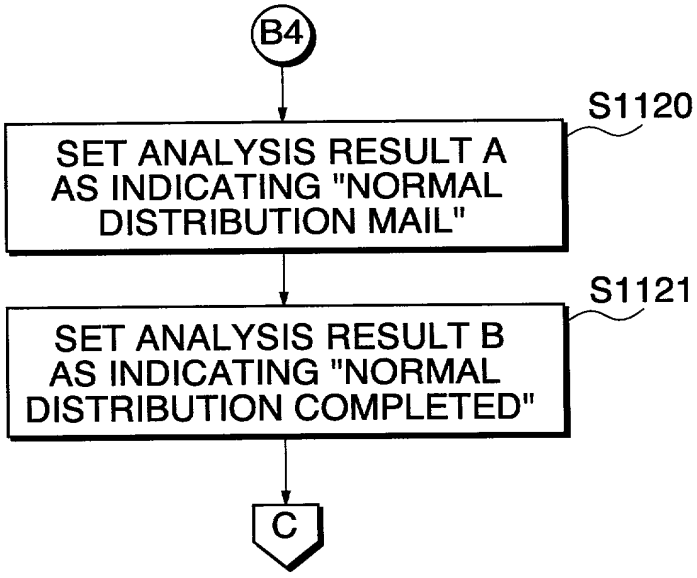

B4
S1120
SET ANALYSIS RESULT A AS INDICATING "NORMAL DISTRIBUTION MAIL"
S1121
SET ANALYSIS RESULT B AS INDICATING "NORMAL DISTRIBUTION COMPLETED"
C

FIG.33

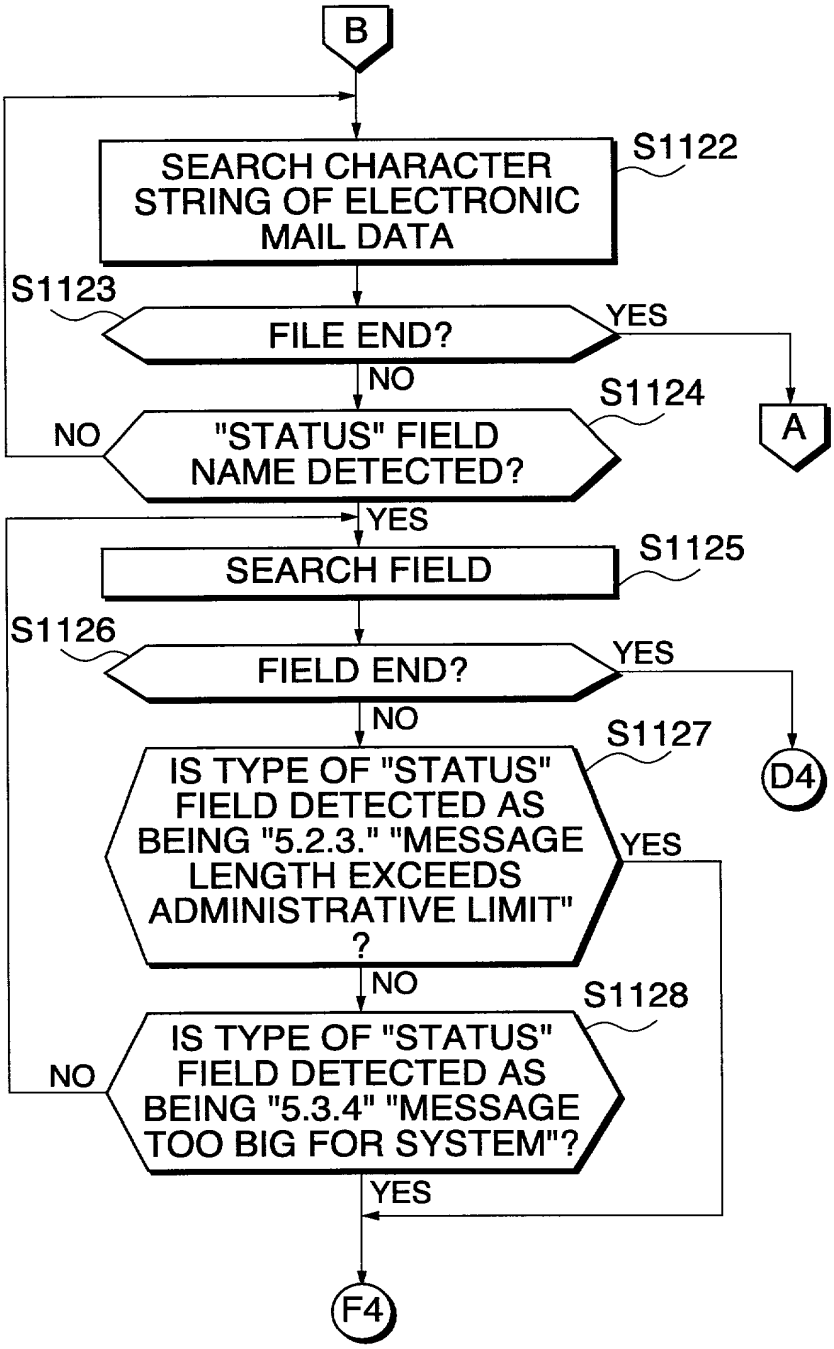

B
SEARCH CHARACTER STRING OF ELECTRONIC MAIL DATA
S1122
S1123
FILE END?
YES
NO
A
S1124
NO
"STATUS" FIELD NAME DETECTED?
YES
SEARCH FIELD
S1125
S1126
FIELD END?
YES
NO
D4
S1127
IS TYPE OF "STATUS" FIELD DETECTED AS BEING "5.2.3." "MESSAGE LENGTH EXCEEDS ADMINISTRATIVE LIMIT" ?
YES
NO
S1128
NO
IS TYPE OF "STATUS" FIELD DETECTED AS BEING "5.3.4" "MESSAGE TOO BIG FOR SYSTEM"?
YES
F4

FIG. 34

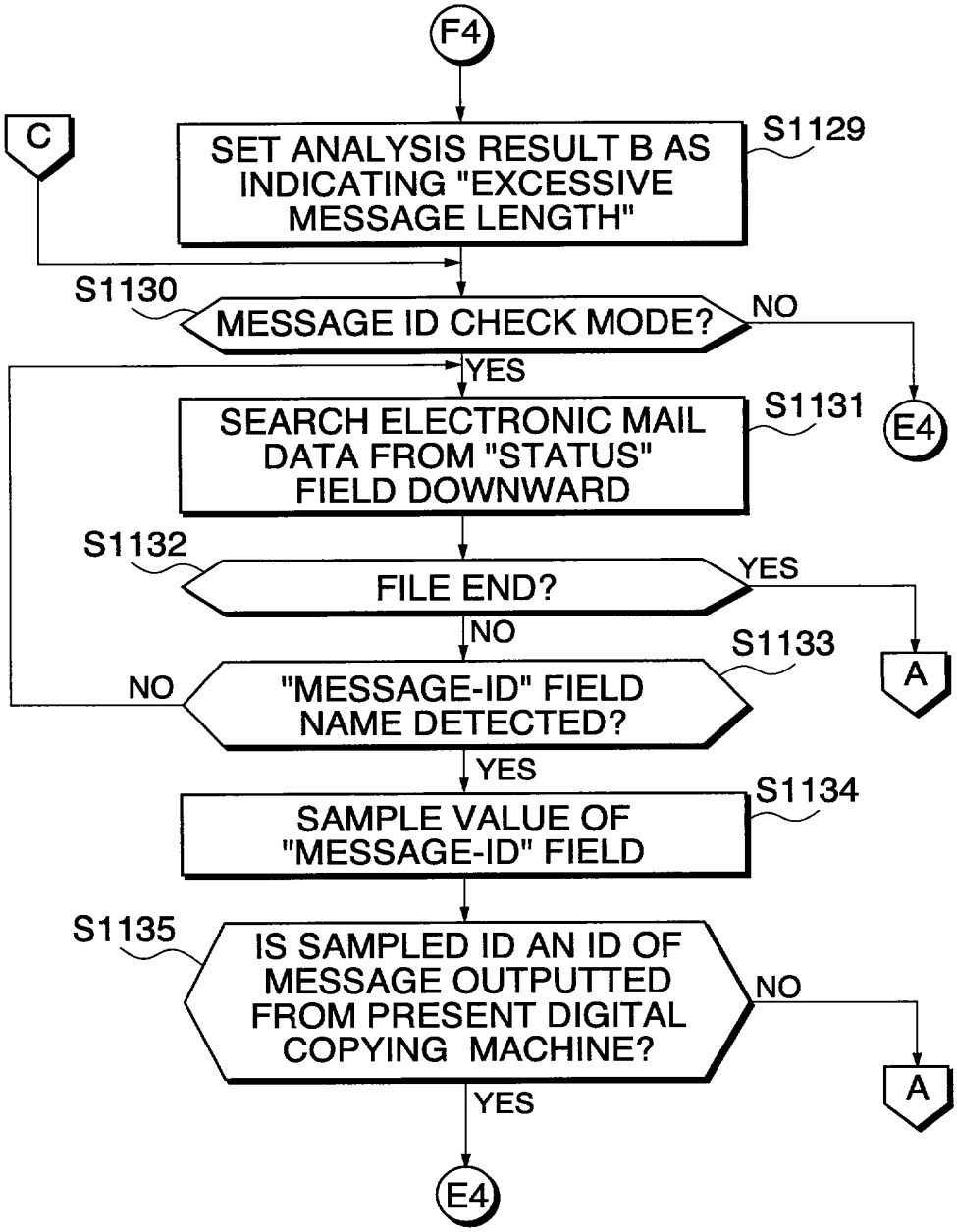

F4
C
SET ANALYSIS RESULT B AS INDICATING "EXCESSIVE MESSAGE LENGTH"
S1129
S1130
MESSAGE ID CHECK MODE?
NO
YES
E4
SEARCH ELECTRONIC MAIL DATA FROM "STATUS" FIELD DOWNWARD
S1131
S1132
FILE END?
YES
NO
A
S1133
NO
"MESSAGE-ID" FIELD NAME DETECTED?
YES
SAMPLE VALUE OF "MESSAGE-ID" FIELD
S1134
S1135
IS SAMPLED ID AN ID OF MESSAGE OUTPUTTED FROM PRESENT DIGITAL COPYING MACHINE?
NO
A
YES
E4

FIG. 35

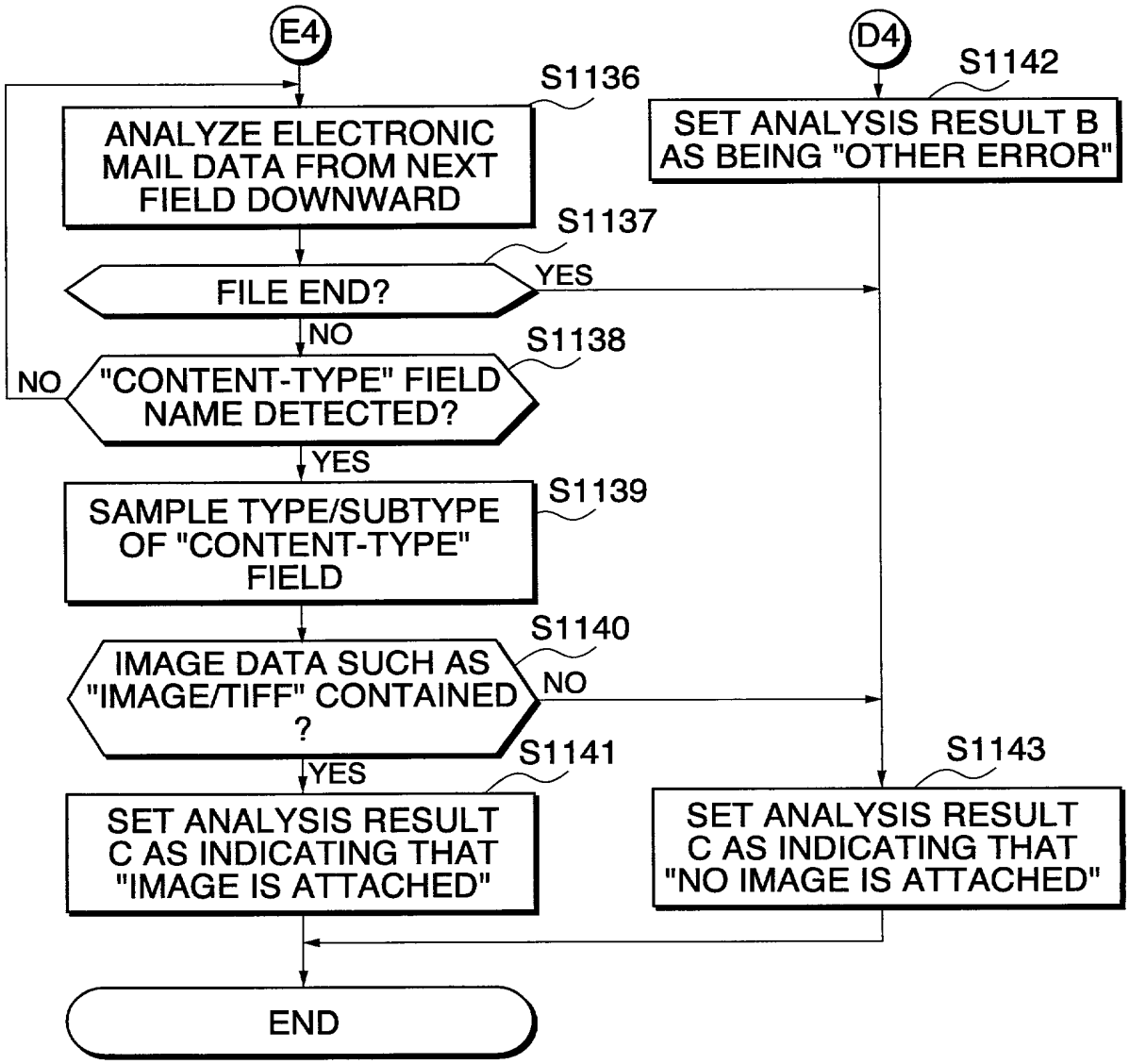

E4
D4
S1136
ANALYZE ELECTRONIC MAIL DATA FROM NEXT FIELD DOWNWARD
S1142
SET ANALYSIS RESULT B AS BEING "OTHER ERROR"
S1137
FILE END?
YES
NO
S1138
NO
"CONTENT-TYPE" FIELD NAME DETECTED?
YES
S1139
SAMPLE TYPE/SUBTYPE OF "CONTENT-TYPE" FIELD
S1140
IMAGE DATA SUCH AS "IMAGE/TIFF" CONTAINED ?
NO
YES
S1141
SET ANALYSIS RESULT C AS INDICATING THAT "IMAGE IS ATTACHED"
S1143
SET ANALYSIS RESULT C AS INDICATING THAT "NO IMAGE IS ATTACHED"
END

FIG. 36

****
* DOCUMENT RETRANSMISSION REPORT *
****

THE FOLLOWING DOCUMENT WAS NOT TRANSMITTED WITH
RESOLUTION LOWERED DUE TO THE SHORTAGE OF
STORAGE CAPACITY AT DESTINATION SIDE.

【ORIGINAL DOCUMENT INFORMATION】
MESSAGE ID: 199808171030. TAA20109@dsn.gp2dp.co.jp
TRANSMISSION DATE: P.M. 7:19, AUGUST 17, 1998
SENDER MAIL ADDRESS : sekiguti@dsn.gp2dp.co.jp
DESTINATION MAIL ADDRESS: suzuki@mailsrv.ip.co.jp
SUBJECT: Catalog materials for IFAX
NUMBER OF TRANSMITTED IMAGES: 1
READING RESOLUTION:600×600DPI
AUTOMATIC CONVERSION DESIGNATION MINIMUM RESOLUTION: 200×200DPI
READ DOCUMENT SIZE: A3
AUTOMATIC CONVERSION DESIGNATION MINIMUM DOCUMENT SIZE:

【RETRANSMISSION INFORMATION】
TRANSMISSION DATE: P.M. 8:10, AUGUST 17, 1998
TRANSMISSION RESOLUTION: 400×400DPI
TRANSMITTED DOCUMENT SIZE: A3
NUMBER OF RETRANSMISSIONS: 1

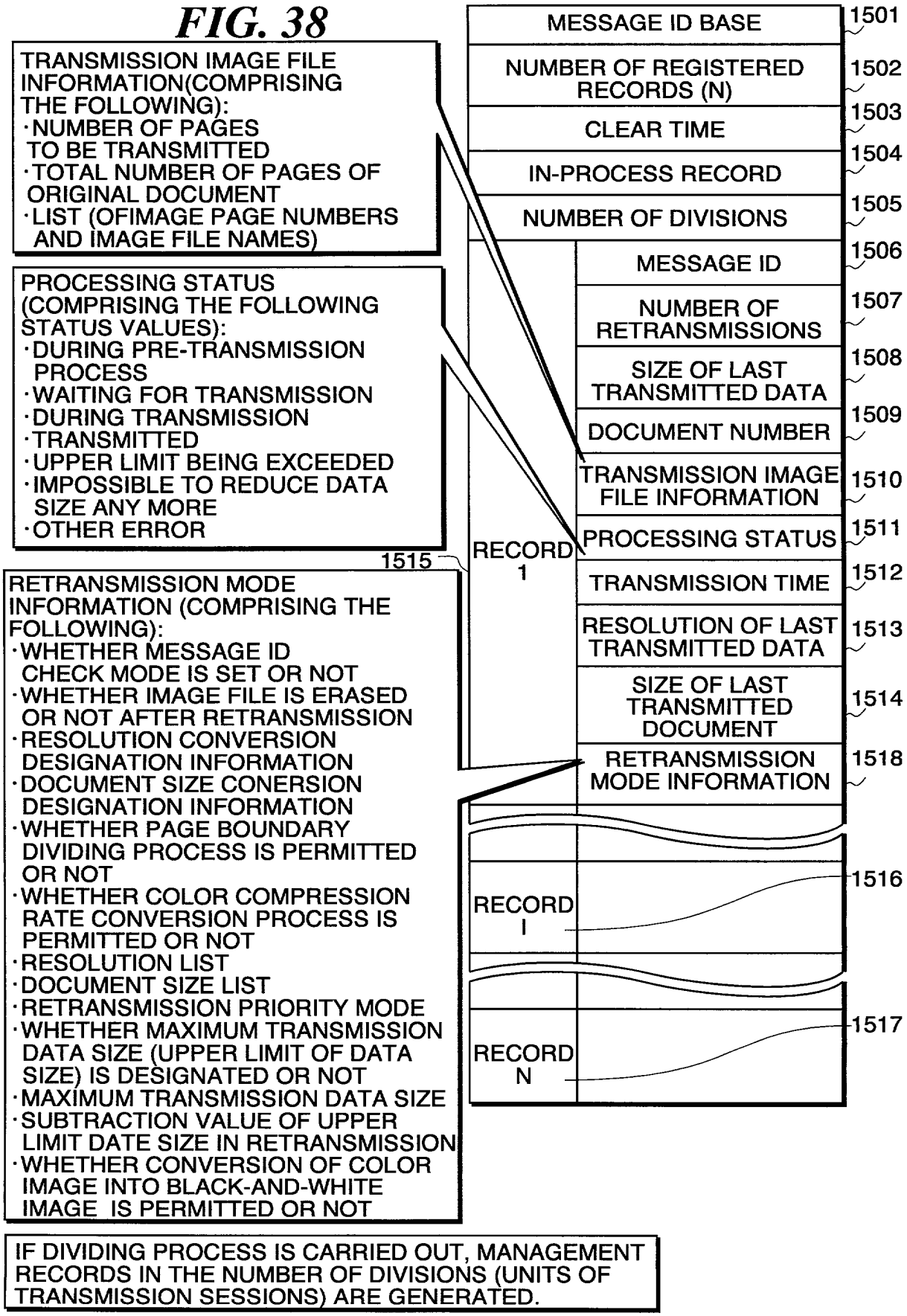
PUBLISHED APPLICATION

FIG. 37

****
* DOCUMENT RETRANSMISSION ERROR REPORT *
****
THE FOLLOWING DOCUMENT WAS NOT TRANSMITTED
DUE TO THE SHORTAGE OF STORAGE CAPACITY
AT DESTINATION SIDE.

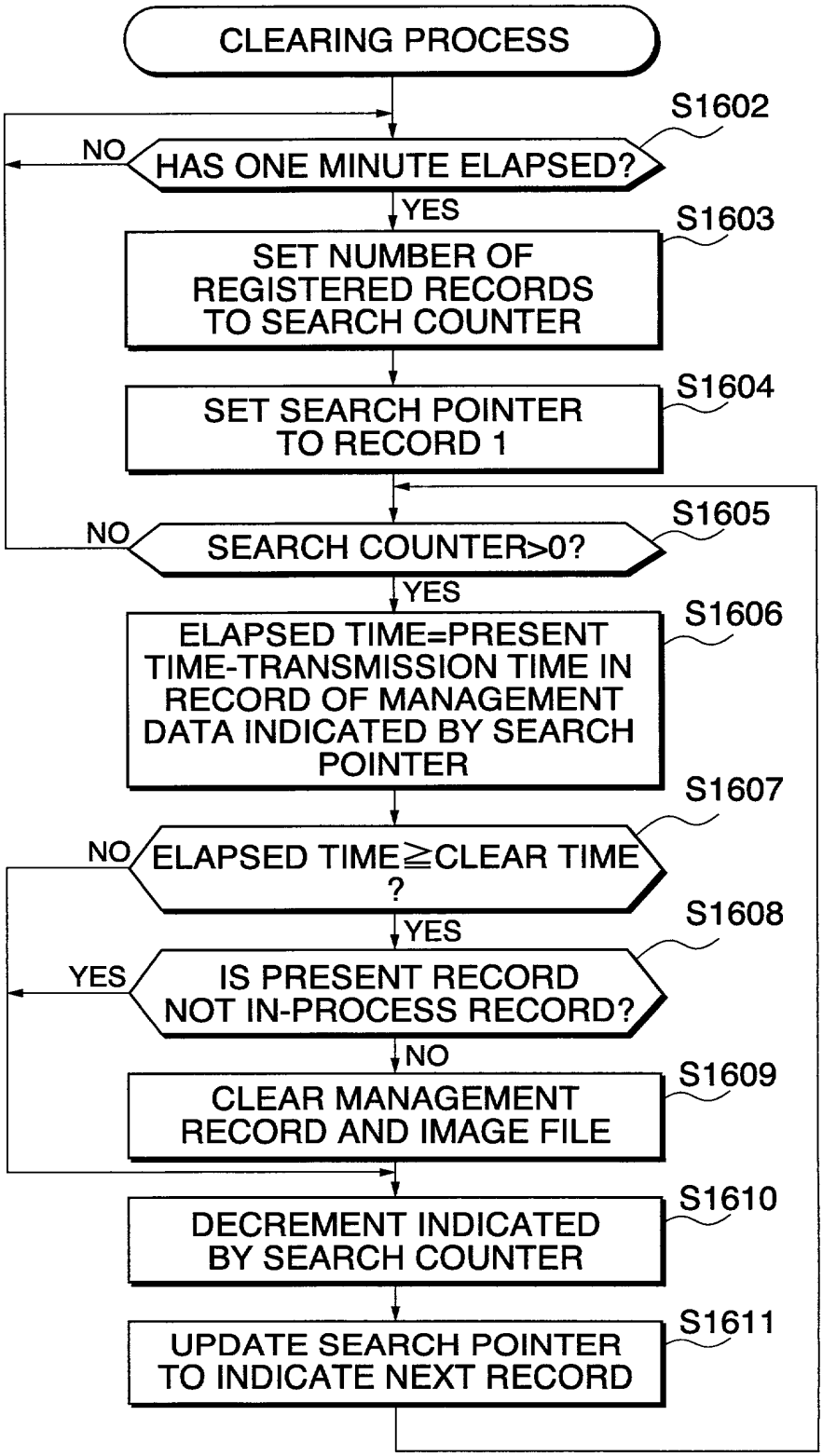
【ORIGINAL DOCUMENT INFORMATION】
MESSAGE ID: 199808171030. TAA20109@dsn.gp2dp.co.jp
TRANSMISSION DATE: P.M. 7:19, AUGUST 17, 1998
SENDER MAIL ADDRESS : sekiguti@dsn.gp2dp.co.jp
DESTINATION MAIL ADDRESS: suzuki@mailsrv.ip.co.jp
SUBJECT: Catalog materials for IFAX
NUMBER OF TRANSMITTED IMAGES: 1
READING RESOLUTION:600×600DPI
AUTOMATIC CONVERSION DESIGNATION MINIMUM RESOLUTION: 200×200DPI
READ DOCUMENT SIZE: A3
AUTOMATIC CONVERSION DESIGNATION MINIMUM DOCUMENT SIZE:
【RETRANSMISSION INFORMATION】
TRANSMISSION DATE: A.M. 0:10, AUGUST 18, 1998
TRANSMISSION RESOLUTION: 200×200DPI
TRANSMITTED DOCUMENT SIZE: A3
NUMBER OF RETRANSMISSIONS: 4

FIG. 38

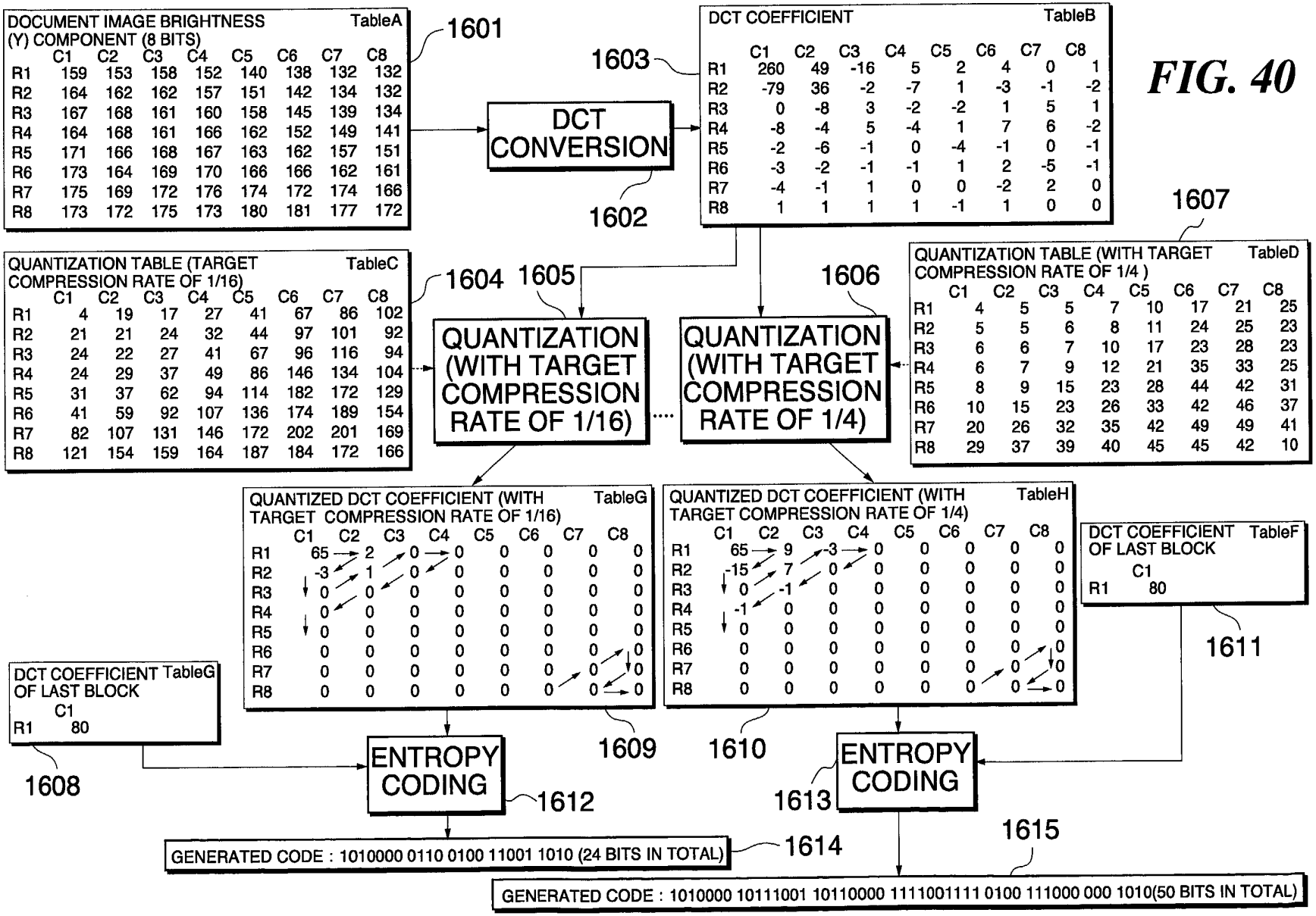


IF DIVIDING PROCESS IS CARRIED OUT, MANAGEMENT RECORDS IN THE NUMBER OF DIVISIONS (UNITS OF TRANSMISSION SESSIONS) ARE GENERATED.

FIG. 39


CLEARING PROCESS
S1602
HAS ONE MINUTE ELAPSED?
NO
YES
S1603
SET NUMBER OF REGISTERED RECORDS TO SEARCH COUNTER
S1604
SET SEARCH POINTER TO RECORD 1
S1605
SEARCH COUNTER>0?
NO
YES
S1606
ELAPSED TIME=PRESENT TIME-TRANSMISSION TIME IN RECORD OF MANAGEMENT DATA INDICATED BY SEARCH POINTER
S1607
ELAPSED TIME≧CLEAR TIME ?
NO
YES
S1608
IS PRESENT RECORD NOT IN-PROCESS RECORD?
YES
NO
S1609
CLEAR MANAGEMENT RECORD AND IMAGE FILE
S1610
DECREMENT INDICATED BY SEARCH COUNTER
S1611
UPDATE SEARCH POINTER TO INDICATE NEXT RECORD

Retrieved from Patentscope



DOCUMENT IMAGE BRIGHTNESS (Y) COMPONENT (8 BITS) TableA

	C1	C2	C3	C4	C5	C6	C7	C8
R1	159	153	158	152	140	138	132	132
R2	164	162	162	157	151	142	134	132
R3	167	168	161	160	158	145	139	134
R4	164	168	161	166	162	152	149	141
R5	171	166	168	167	163	162	157	151
R6	173	164	169	170	166	166	162	161
R7	175	169	172	176	174	172	174	166
R8	173	172	175	173	180	181	177	172

DCT COEFFICIENT TableB

	C1	C2	C3	C4	C5	C6	C7	C8
R1	260	49	-16	5	2	4	0	1
R2	-79	36	-2	-7	1	-3	-1	-2
R3	0	-8	3	-2	-2	1	5	1
R4	-8	-4	5	-4	1	7	6	-2
R5	-2	-6	-1	0	-4	-1	0	-1
R6	-3	-2	-1	-1	1	2	-5	-1
R7	-4	-1	1	0	0	-2	2	0
R8	1	1	1	1	-1	1	0	0

QUANTIZATION TABLE (TARGET COMPRESSION RATE OF 1/16) TableC

	C1	C2	C3	C4	C5	C6	C7	C8
R1	4	19	17	27	41	67	86	102
R2	21	21	24	32	44	97	101	92
R3	24	22	27	41	67	96	116	94
R4	24	29	37	49	86	146	134	104
R5	31	37	62	94	114	182	172	129
R6	41	59	92	107	136	174	189	154
R7	82	107	131	146	172	202	201	169
R8	121	154	159	164	187	184	172	166

QUANTIZATION TABLE (WITH TARGET COMPRESSION RATE OF 1/4) TableD

	C1	C2	C3	C4	C5	C6	C7	C8
R1	4	5	5	7	10	17	21	25
R2	5	5	6	8	11	24	25	23
R3	6	6	7	10	17	23	28	23
R4	6	7	9	12	21	35	33	25
R5	8	9	15	23	28	44	42	31
R6	10	15	23	26	33	42	46	37
R7	20	26	32	35	42	49	49	41
R8	29	37	39	40	45	45	42	10

QUANTIZED DCT COEFFICIENT (WITH TARGET COMPRESSION RATE OF 1/16) TableG

	C1	C2	C3	C4	C5	C6	C7	C8
R1	65	2	0	0	0	0	0	0
R2	-3	1	0	0	0	0	0	0
R3	0	0	0	0	0	0	0	0
R4	0	0	0	0	0	0	0	0
R5	0	0	0	0	0	0	0	0
R6	0	0	0	0	0	0	0	0
R7	0	0	0	0	0	0	0	0
R8	0	0	0	0	0	0	0	0

QUANTIZED DCT COEFFICIENT (WITH TARGET COMPRESSION RATE OF 1/4) TableH

	C1	C2	C3	C4	C5	C6	C7	C8
R1	65	9	-3	0	0	0	0	0
R2	-15	7	0	0	0	0	0	0
R3	0	-1	0	0	0	0	0	0
R4	-1	0	0	0	0	0	0	0
R5	0	0	0	0	0	0	0	0
R6	0	0	0	0	0	0	0	0
R7	0	0	0	0	0	0	0	0
R8	0	0	0	0	0	0	0	0

DCT COEFFICIENT OF LAST BLOCK TableF

	C1
R1	80

DCT COEFFICIENT TableG OF LAST BLOCK

	C1
R1	80

ENTROPY CODING

ENTROPY CODING

GENERATED CODE : 1010000 0110 0100 11001 1010 (24 BITS IN TOTAL)

GENERATED CODE : 1010000 10111001 10110000 1111001111 0100 111000 000 1010(50 BITS IN TOTAL)

FIG. 40

Printed translation

FIG. 41

TableG DC COEFFICIENT CODING:	TableG (R1<C1)-TableE(R1,C1) → =65-80=-15	SSSS =4 SSSS CODE=101	ADDITIONAL BIT CODE =0000	DC COEFFICIENT CODE =1010000(7BITS)

TableG AC COEFFICIENT CODING:	OBSERVED COEFFICIENT	COEFFICIENT VALUE	0 RUN LENGTH	SSSS	SSSS CODE	ADDITIONAL BIT	EFFECTIVE COEFFICIENT CODE	EFFECTIVE COEFFICIENT CODE BIT LENGTH
	TableG(R1,C2)	2	0	2	01	10	0110	4
	TableG(R2,C1)	-3	0	2	00	00	0100	4
	TableG(R2,C2)	1	1	1	1100	1	11001	5
	END						1010(EOB)	4

TableG CODE: 1010000 0110 0100 11001 1010 (24 BITS IN TOTAL)

Translated Submitted

FIG. 42

TableG DC COEFFICIENT CODING	TableG (R1<C1)-TableE(R1,C1) =65-80=-15 →		SSSS =4 SSSS CODE=101			ADDITIONAL BIT CODE =0000	DC COEFFICIENT CODE =1010000(7BITS)	
TableG AC COEFFICIENT CODING	OBSERVED COEFFICIENT	COEFFICIENT VALUE	0 RUN LENGTH	SSSS	SSSS CODE	ADDITIONAL BIT	EFFECTIVE COEFFICIENT CODE	EFFECTIVE COEFFICIENT CODE BIT LENGTH
	TableH(R1,C2)	9	0	4	1011	1001	10111001	8
	TableH(R2,C1)	-15	0	4	1011	0000	10110000	8
	TableH(R3,C1)	7	1	3	1111001	111	1111001111	10
	TableH(R1,C3)	-3	0	2	01	00	0100	4
	TableH(R3,C2)	-1	2	1	11100	00	111000	6
	TableH(R4,C1)	-1	0	1	00	0	000	3
	END						1010(EOB)	4
TableH CODE: 1010000 10111001 10110000 1111001111 0100 111000 000 1010 (50 BITS IN TOTAL)								

FIG. 43A

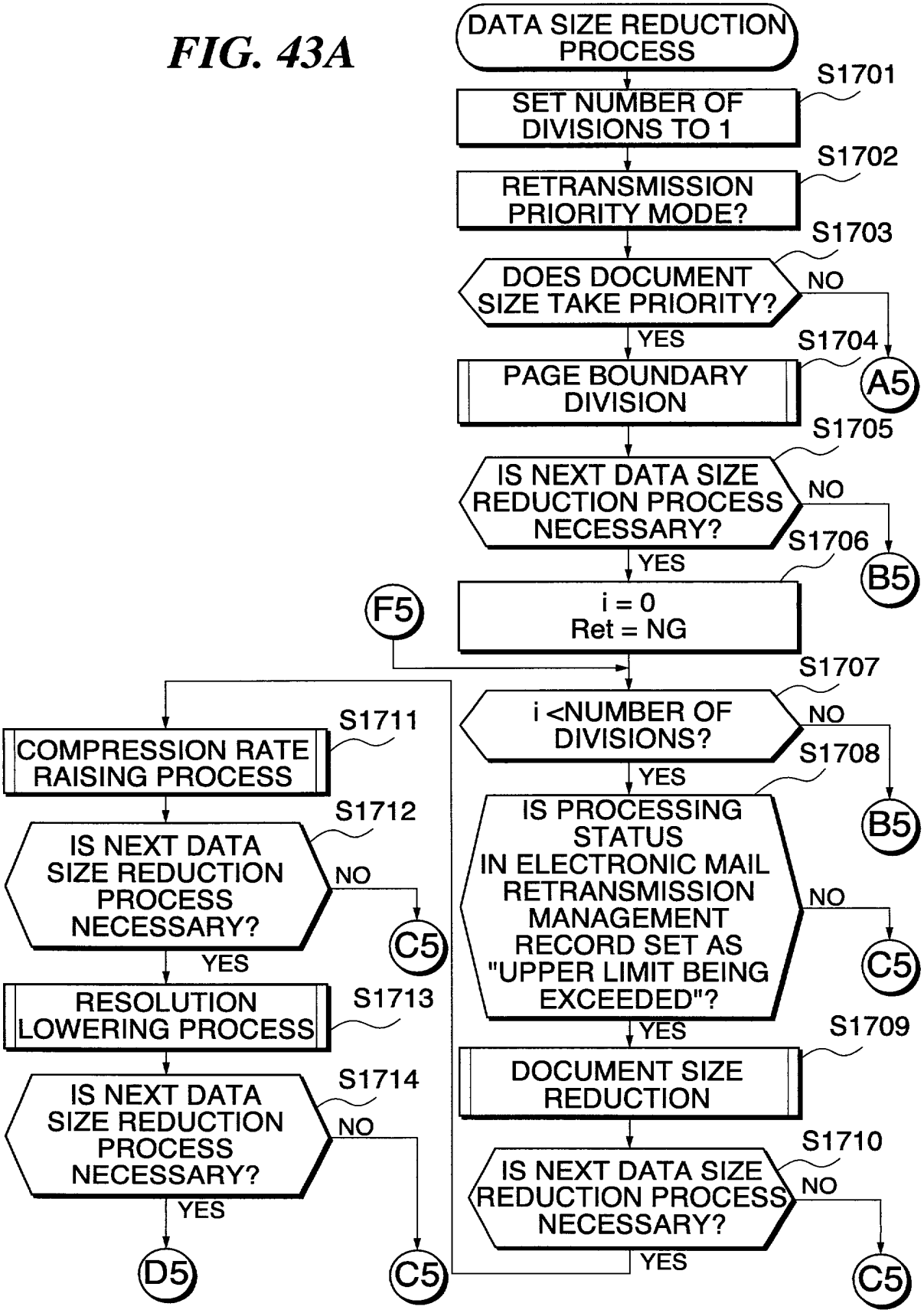

DATA SIZE REDUCTION PROCESS
S1701
SET NUMBER OF DIVISIONS TO 1
S1702
RETRANSMISSION PRIORITY MODE?
S1703
DOES DOCUMENT SIZE TAKE PRIORITY?
NO
YES
S1704
PAGE BOUNDARY DIVISION
A5
S1705
IS NEXT DATA SIZE REDUCTION PROCESS NECESSARY?
NO
YES
S1706
B5
i = 0
Ret = NG
F5
S1707
i <NUMBER OF DIVISIONS?
NO
YES
S1708
B5
IS PROCESSING STATUS IN ELECTRONIC MAIL RETRANSMISSION MANAGEMENT RECORD SET AS "UPPER LIMIT BEING EXCEEDED"?
NO
C5
YES
S1709
DOCUMENT SIZE REDUCTION
S1710
IS NEXT DATA SIZE REDUCTION PROCESS NECESSARY?
NO
YES
C5
S1711
COMPRESSION RATE RAISING PROCESS
S1712
IS NEXT DATA SIZE REDUCTION PROCESS NECESSARY?
NO
C5
YES
S1713
RESOLUTION LOWERING PROCESS
S1714
IS NEXT DATA SIZE REDUCTION PROCESS NECESSARY?
NO
YES
D5
C5

FIG. 43B

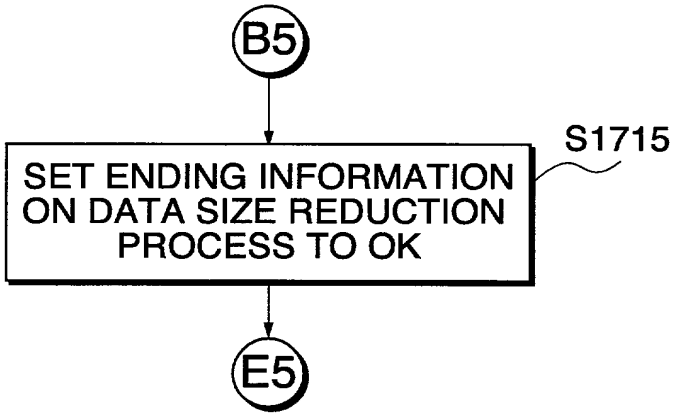


FIG. 43C

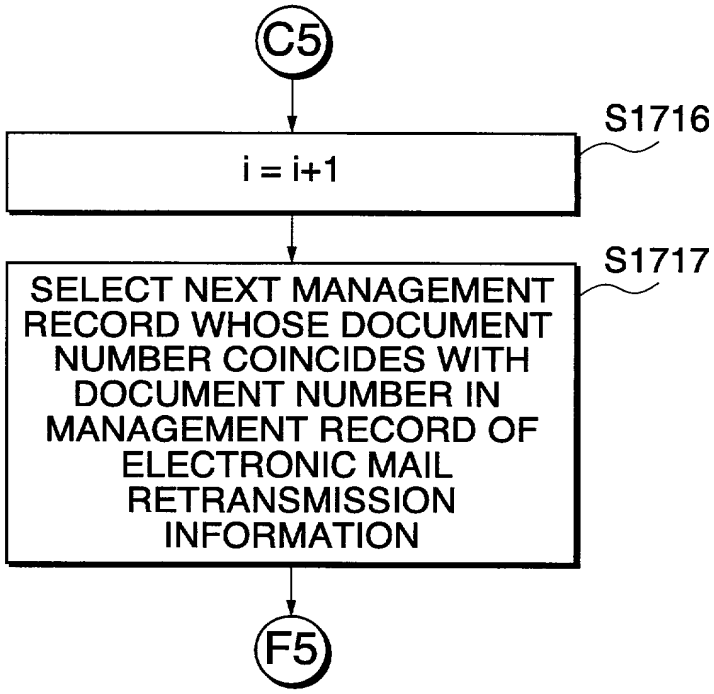


FIG. 43D

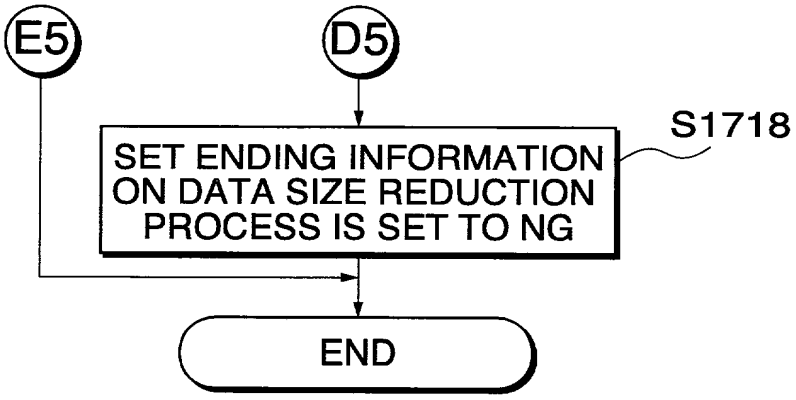


FIG. 44A

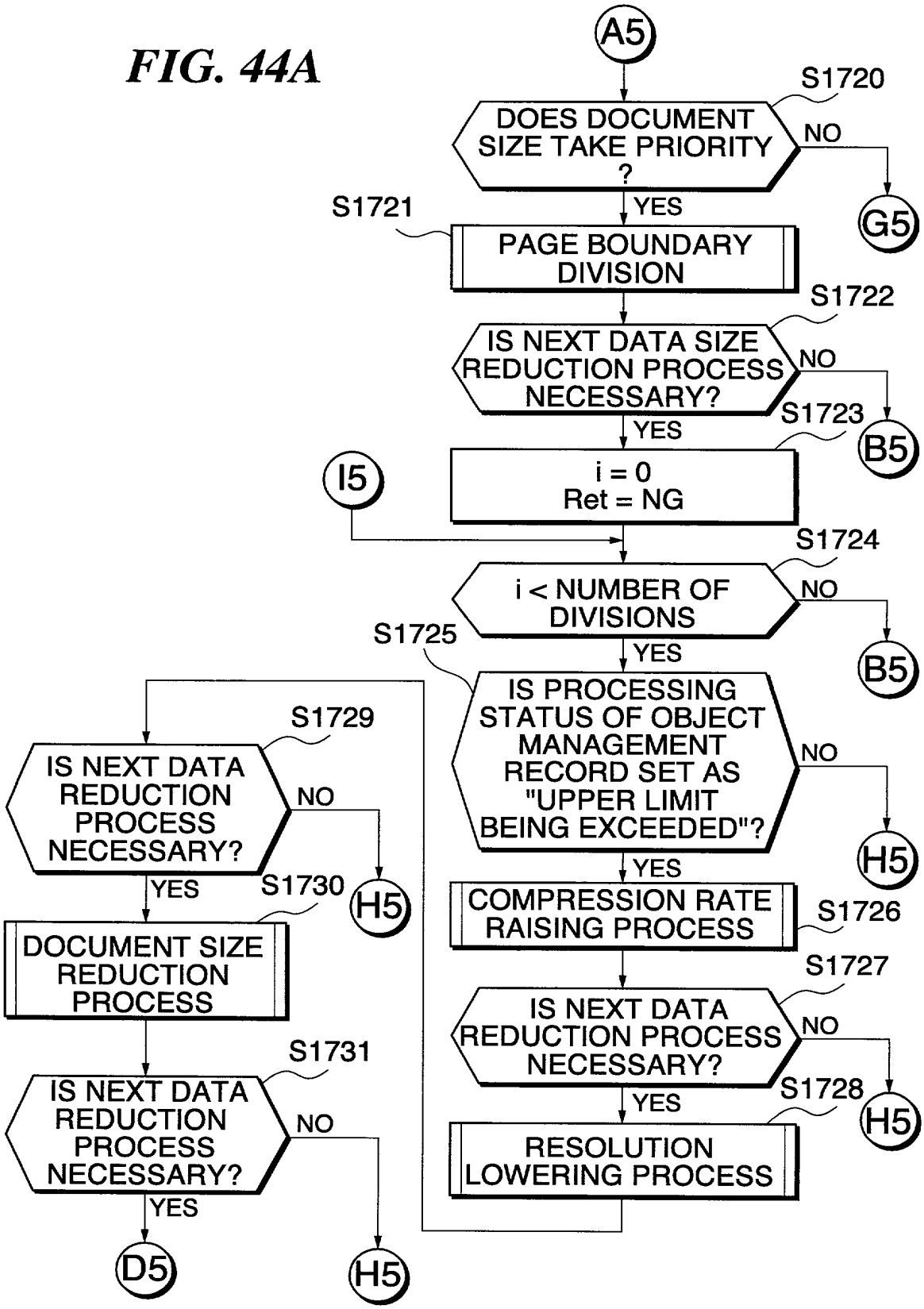

A5
S1720
DOES DOCUMENT SIZE TAKE PRIORITY ?
NO
G5
YES
S1721
PAGE BOUNDARY DIVISION
S1722
IS NEXT DATA SIZE REDUCTION PROCESS NECESSARY?
NO
B5
YES
S1723
I5
i = 0
Ret = NG
S1724
i < NUMBER OF DIVISIONS
NO
B5
YES
S1725
IS PROCESSING STATUS OF OBJECT MANAGEMENT RECORD SET AS "UPPER LIMIT BEING EXCEEDED"?
NO
H5
YES
COMPRESSION RATE RAISING PROCESS
S1726
S1727
IS NEXT DATA REDUCTION PROCESS NECESSARY?
NO
H5
YES
S1728
RESOLUTION LOWERING PROCESS
S1729
IS NEXT DATA REDUCTION PROCESS NECESSARY?
NO
H5
YES
S1730
DOCUMENT SIZE REDUCTION PROCESS
S1731
IS NEXT DATA REDUCTION PROCESS NECESSARY?
NO
H5
YES
D5

FIG. 44B

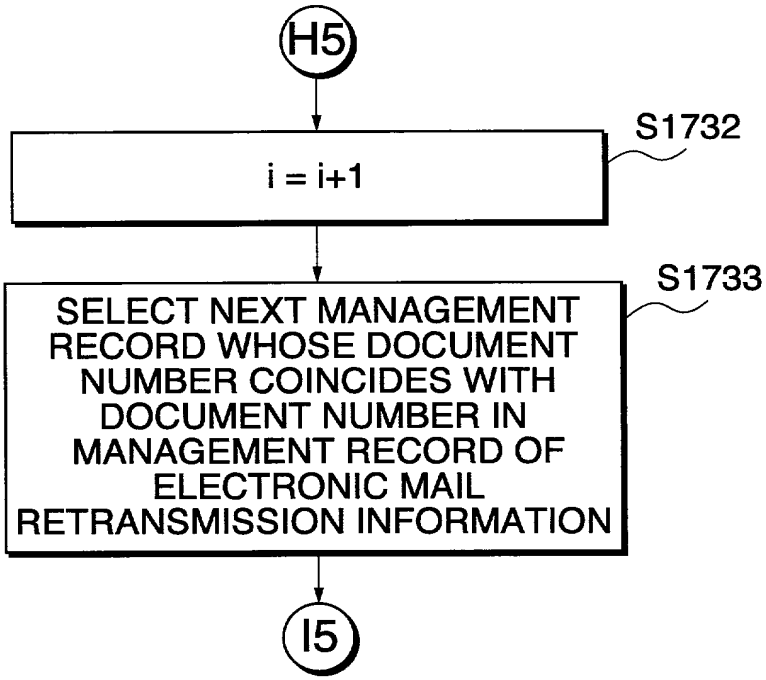

H5
S1732
i = i+1
S1733
SELECT NEXT MANAGEMENT RECORD WHOSE DOCUMENT NUMBER COINCIDES WITH DOCUMENT NUMBER IN MANAGEMENT RECORD OF ELECTRONIC MAIL RETRANSMISSION INFORMATION
I5

FIG. 45

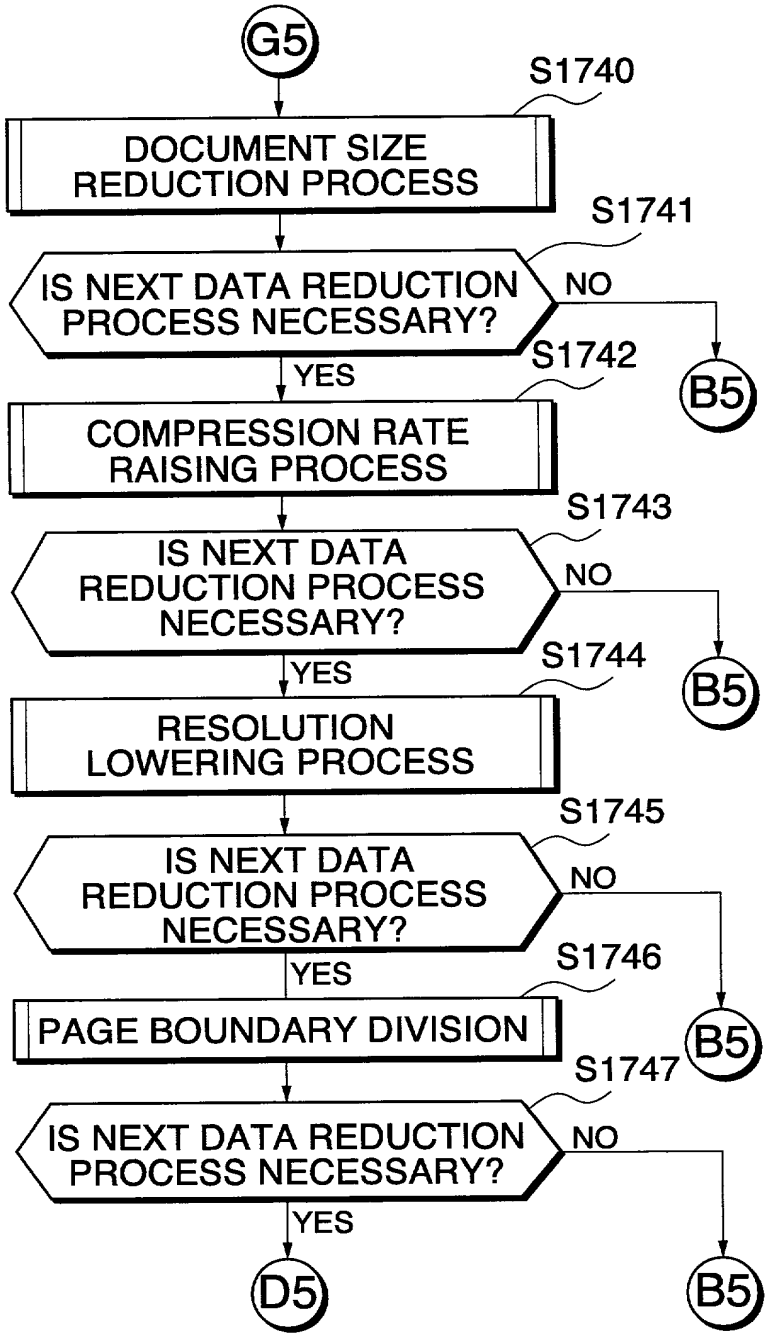

G5
S1740
DOCUMENT SIZE REDUCTION PROCESS
S1741
IS NEXT DATA REDUCTION PROCESS NECESSARY?
NO
B5
YES
S1742
COMPRESSION RATE RAISING PROCESS
S1743
IS NEXT DATA REDUCTION PROCESS NECESSARY?
NO
B5
YES
S1744
RESOLUTION LOWERING PROCESS
S1745
IS NEXT DATA REDUCTION PROCESS NECESSARY?
NO
B5
YES
S1746
PAGE BOUNDARY DIVISION
S1747
IS NEXT DATA REDUCTION PROCESS NECESSARY?
NO
B5
YES
D5

FIG. 46A

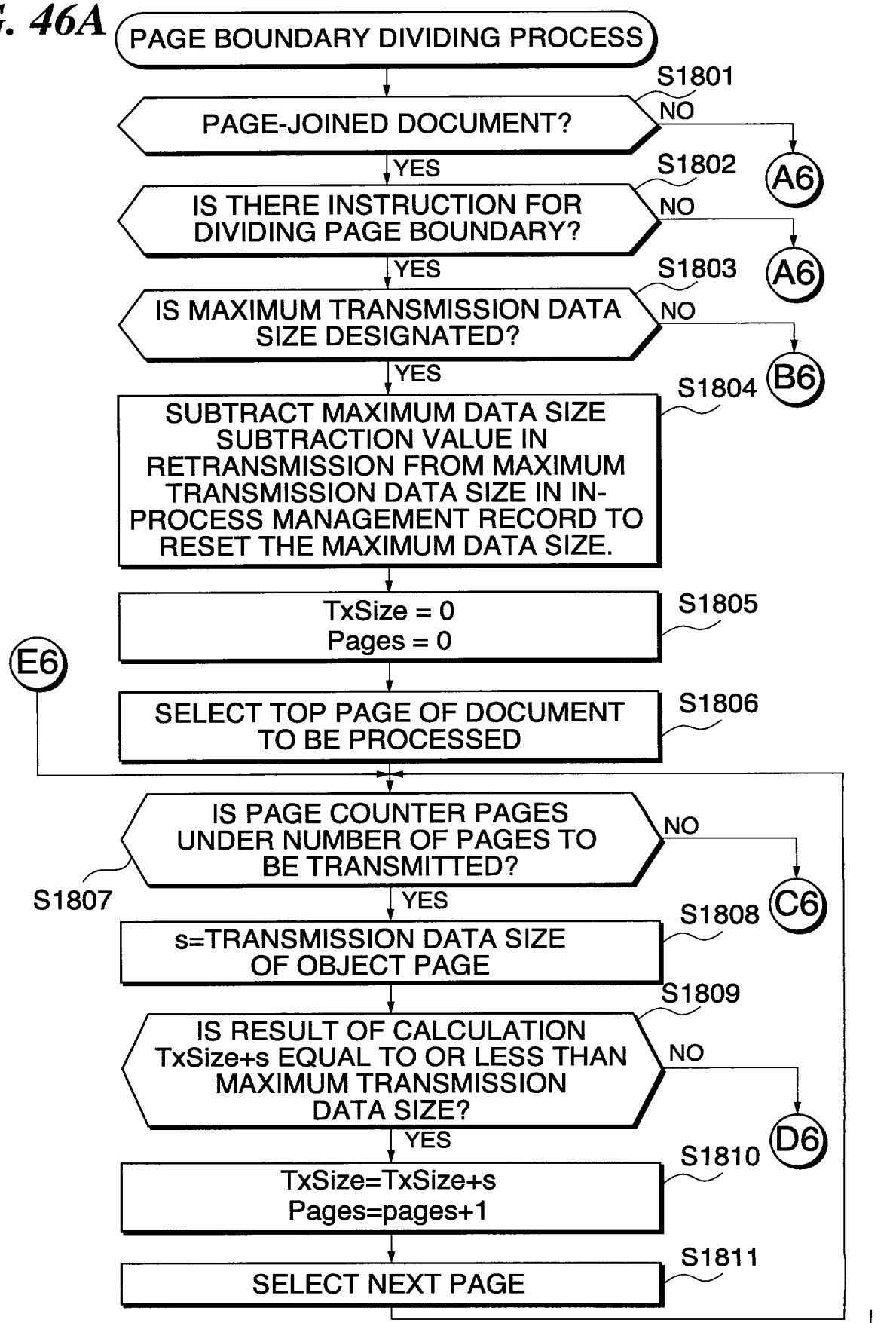

PAGE BOUNDARY DIVIDING PROCESS
S1801
PAGE-JOINED DOCUMENT?
NO
A6
YES
S1802
IS THERE INSTRUCTION FOR DIVIDING PAGE BOUNDARY?
NO
A6
YES
S1803
IS MAXIMUM TRANSMISSION DATA SIZE DESIGNATED?
NO
B6
YES
S1804
SUBTRACT MAXIMUM DATA SIZE SUBTRACTION VALUE IN RETRANSMISSION FROM MAXIMUM TRANSMISSION DATA SIZE IN IN-PROCESS MANAGEMENT RECORD TO RESET THE MAXIMUM DATA SIZE.
S1805
TxSize = 0
Pages = 0
E6
S1806
SELECT TOP PAGE OF DOCUMENT TO BE PROCESSED
S1807
IS PAGE COUNTER PAGES UNDER NUMBER OF PAGES TO BE TRANSMITTED?
NO
C6
YES
S1808
s=TRANSMISSION DATA SIZE OF OBJECT PAGE
S1809
IS RESULT OF CALCULATION TxSize+s EQUAL TO OR LESS THAN MAXIMUM TRANSMISSION DATA SIZE?
NO
D6
YES
S1810
TxSize=TxSize+s
Pages=pages+1
S1811
SELECT NEXT PAGE

FIG. 46B

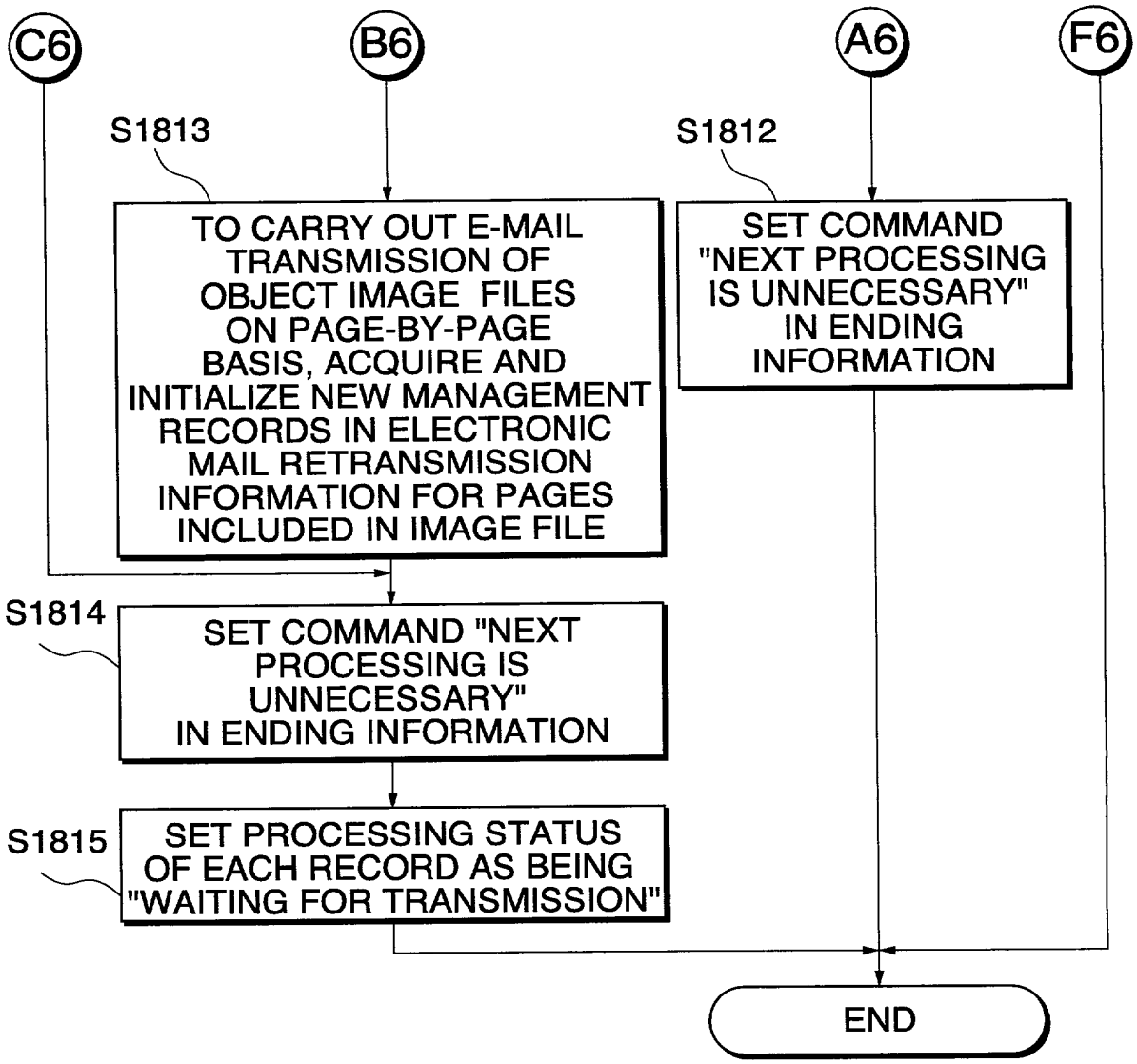

C6
B6
A6
F6
S1813
TO CARRY OUT E-MAIL TRANSMISSION OF OBJECT IMAGE FILES ON PAGE-BY-PAGE BASIS, ACQUIRE AND INITIALIZE NEW MANAGEMENT RECORDS IN ELECTRONIC MAIL RETRANSMISSION INFORMATION FOR PAGES INCLUDED IN IMAGE FILE
S1812
SET COMMAND "NEXT PROCESSING IS UNNECESSARY" IN ENDING INFORMATION
S1814
SET COMMAND "NEXT PROCESSING IS UNNECESSARY" IN ENDING INFORMATION
S1815
SET PROCESSING STATUS OF EACH RECORD AS BEING "WAITING FOR TRANSMISSION"
END

FIG. 47

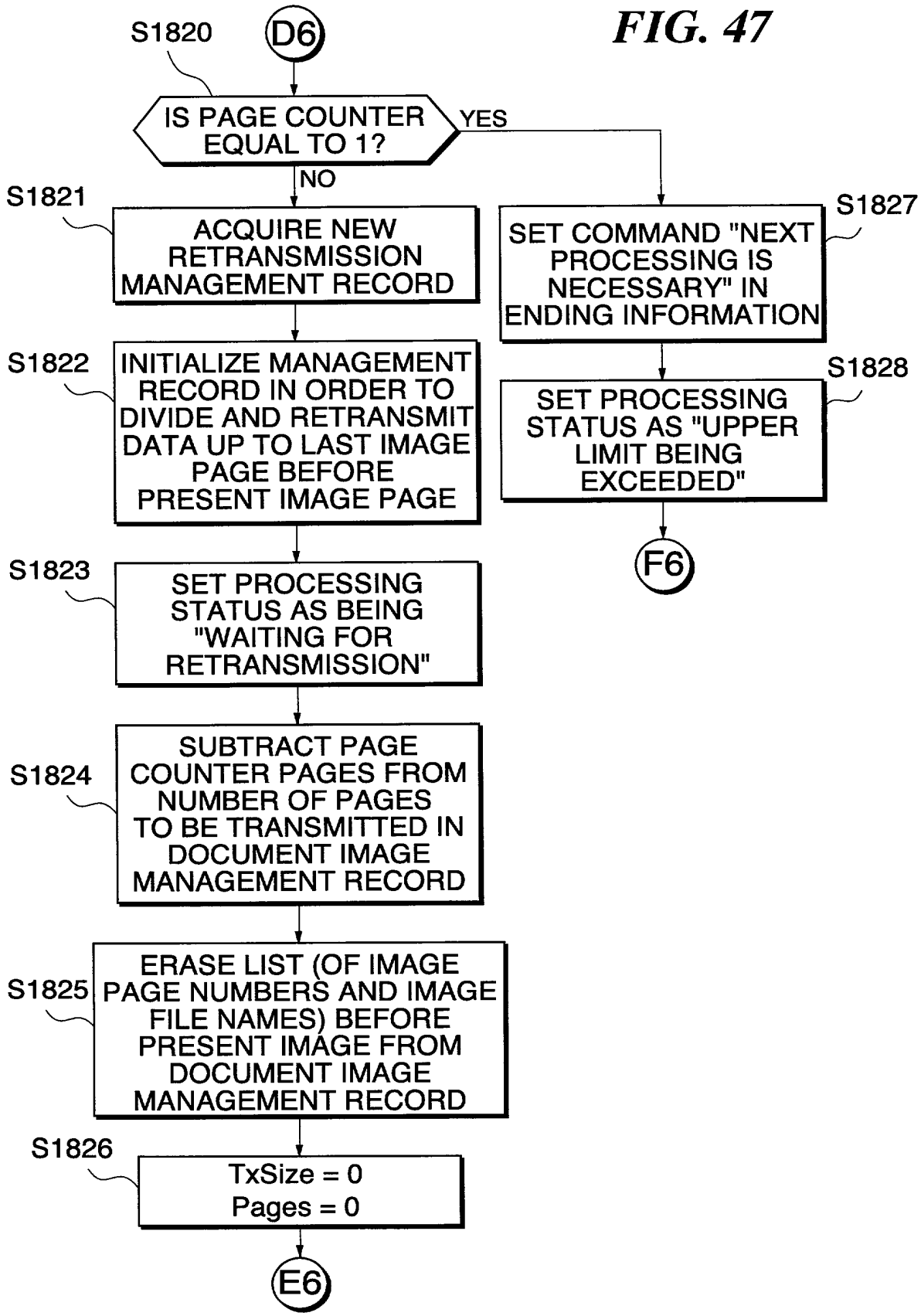

S1820
D6
IS PAGE COUNTER EQUAL TO 1?
YES
NO
S1821
ACQUIRE NEW RETRANSMISSION MANAGEMENT RECORD
S1822
INITIALIZE MANAGEMENT RECORD IN ORDER TO DIVIDE AND RETRANSMIT DATA UP TO LAST IMAGE PAGE BEFORE PRESENT IMAGE PAGE
S1823
SET PROCESSING STATUS AS BEING "WAITING FOR RETRANSMISSION"
S1824
SUBTRACT PAGE COUNTER PAGES FROM NUMBER OF PAGES TO BE TRANSMITTED IN DOCUMENT IMAGE MANAGEMENT RECORD
S1825
ERASE LIST (OF IMAGE PAGE NUMBERS AND IMAGE FILE NAMES) BEFORE PRESENT IMAGE FROM DOCUMENT IMAGE MANAGEMENT RECORD
S1826
TxSize = 0
Pages = 0
E6
S1827
SET COMMAND "NEXT PROCESSING IS NECESSARY" IN ENDING INFORMATION
S1828
SET PROCESSING STATUS AS "UPPER LIMIT BEING EXCEEDED"
F6

FIG. 48A

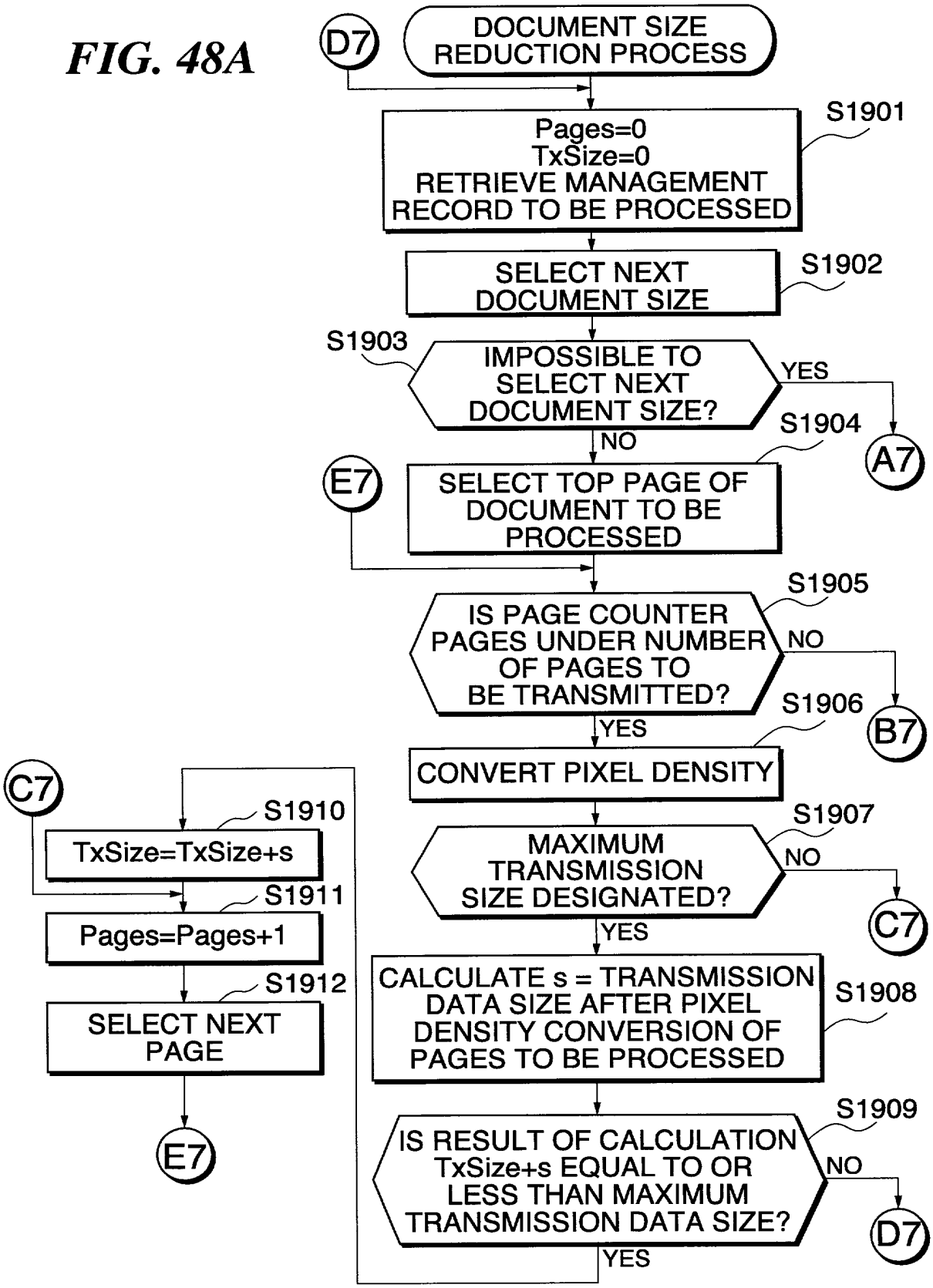

D7
DOCUMENT SIZE REDUCTION PROCESS
S1901
Pages=0
TxSize=0
RETRIEVE MANAGEMENT RECORD TO BE PROCESSED
S1902
SELECT NEXT DOCUMENT SIZE
S1903
IMPOSSIBLE TO SELECT NEXT DOCUMENT SIZE?
YES
A7
NO
S1904
E7
SELECT TOP PAGE OF DOCUMENT TO BE PROCESSED
S1905
IS PAGE COUNTER PAGES UNDER NUMBER OF PAGES TO BE TRANSMITTED?
NO
B7
YES
S1906
CONVERT PIXEL DENSITY
S1907
MAXIMUM TRANSMISSION SIZE DESIGNATED?
NO
C7
YES
S1908
CALCULATE s = TRANSMISSION DATA SIZE AFTER PIXEL DENSITY CONVERSION OF PAGES TO BE PROCESSED
S1909
IS RESULT OF CALCULATION TxSize+s EQUAL TO OR LESS THAN MAXIMUM TRANSMISSION DATA SIZE?
NO
D7
YES
C7
S1910
TxSize=TxSize+s
S1911
Pages=Pages+1
S1912
SELECT NEXT PAGE
E7

FIG. 48B

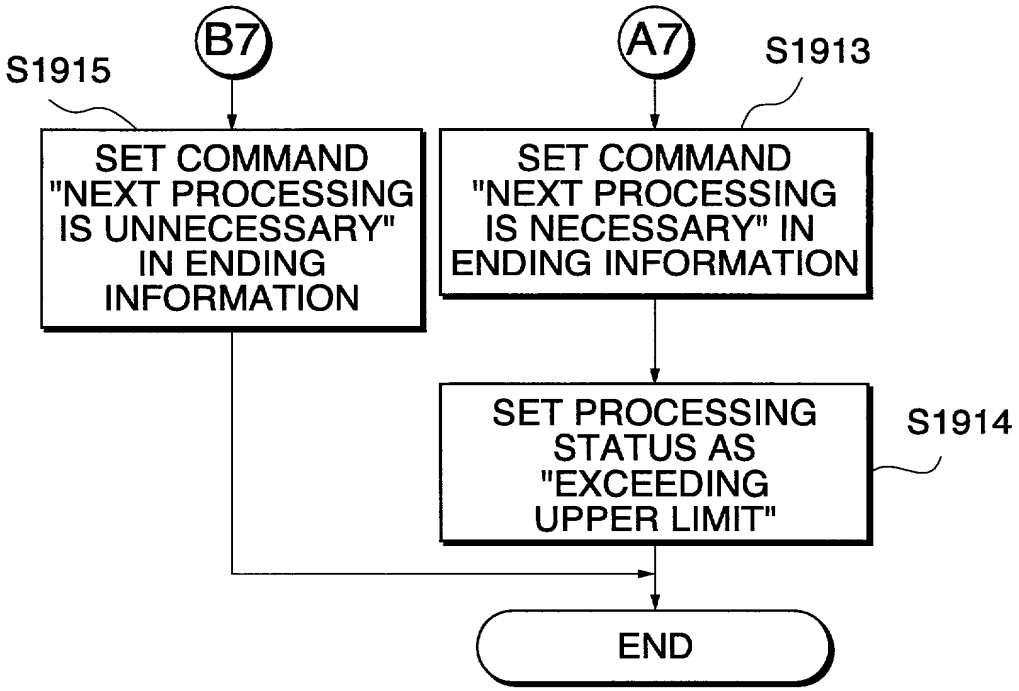

B7
A7
S1915
S1913
SET COMMAND "NEXT PROCESSING IS UNNECESSARY" IN ENDING INFORMATION
SET COMMAND "NEXT PROCESSING IS NECESSARY" IN ENDING INFORMATION
SET PROCESSING STATUS AS "EXCEEDING UPPER LIMIT"
S1914
END

FIG. 49A

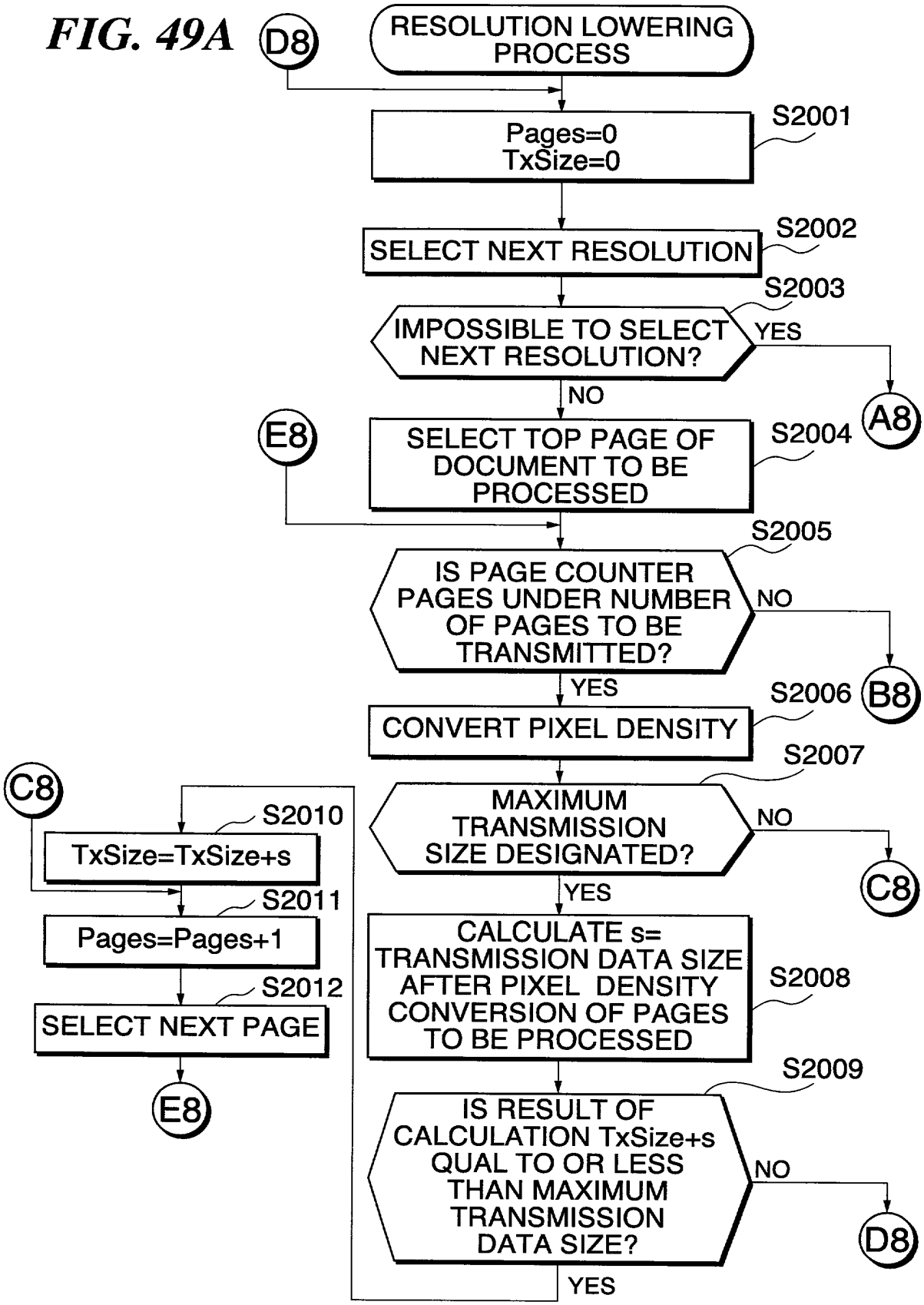

D8
RESOLUTION LOWERING PROCESS
Pages=0
TxSize=0
S2001
SELECT NEXT RESOLUTION
S2002
IMPOSSIBLE TO SELECT NEXT RESOLUTION?
S2003
YES
NO
A8
E8
SELECT TOP PAGE OF DOCUMENT TO BE PROCESSED
S2004
IS PAGE COUNTER PAGES UNDER NUMBER OF PAGES TO BE TRANSMITTED?
S2005
NO
YES
B8
CONVERT PIXEL DENSITY
S2006
MAXIMUM TRANSMISSION SIZE DESIGNATED?
S2007
NO
C8
YES
CALCULATE s= TRANSMISSION DATA SIZE AFTER PIXEL DENSITY CONVERSION OF PAGES TO BE PROCESSED
S2008
IS RESULT OF CALCULATION TxSize+s QUAL TO OR LESS THAN MAXIMUM TRANSMISSION DATA SIZE?
S2009
NO
D8
YES
C8
TxSize=TxSize+s
S2010
Pages=Pages+1
S2011
SELECT NEXT PAGE
S2012
E8

FIG. 49B

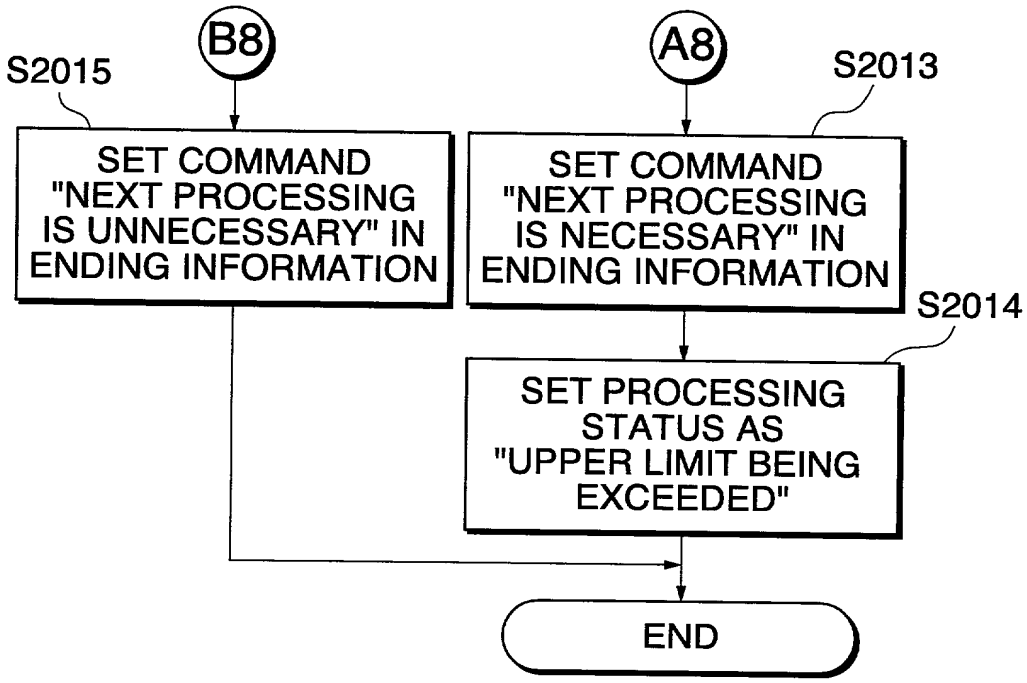

B8
A8
S2015
S2013
SET COMMAND "NEXT PROCESSING IS UNNECESSARY" IN ENDING INFORMATION
SET COMMAND "NEXT PROCESSING IS NECESSARY" IN ENDING INFORMATION
S2014
SET PROCESSING STATUS AS "UPPER LIMIT BEING EXCEEDED"
END

FIG. 50A

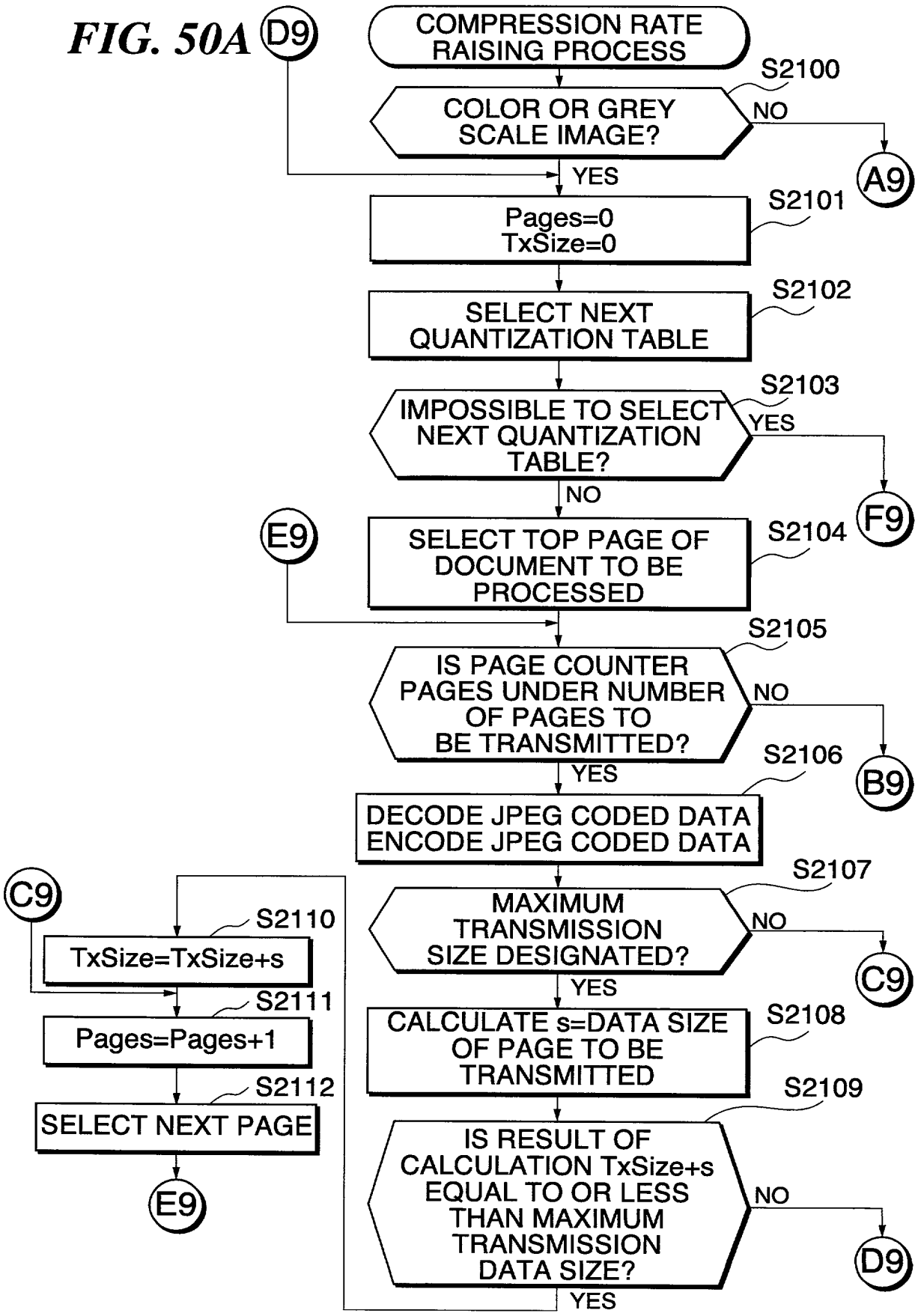

D9
COMPRESSION RATE RAISING PROCESS
S2100
COLOR OR GREY SCALE IMAGE?
NO
A9
YES
S2101
Pages=0
TxSize=0
S2102
SELECT NEXT QUANTIZATION TABLE
S2103
IMPOSSIBLE TO SELECT NEXT QUANTIZATION TABLE?
YES
F9
NO
E9
S2104
SELECT TOP PAGE OF DOCUMENT TO BE PROCESSED
S2105
IS PAGE COUNTER PAGES UNDER NUMBER OF PAGES TO BE TRANSMITTED?
NO
B9
YES
S2106
DECODE JPEG CODED DATA
ENCODE JPEG CODED DATA
S2107
MAXIMUM TRANSMISSION SIZE DESIGNATED?
NO
C9
YES
S2108
CALCULATE s=DATA SIZE OF PAGE TO BE TRANSMITTED
S2109
IS RESULT OF CALCULATION TxSize+s EQUAL TO OR LESS THAN MAXIMUM TRANSMISSION DATA SIZE?
NO
D9
YES
C9
S2110
TxSize=TxSize+s
S2111
Pages=Pages+1
S2112
SELECT NEXT PAGE
E9

FIG. 50B

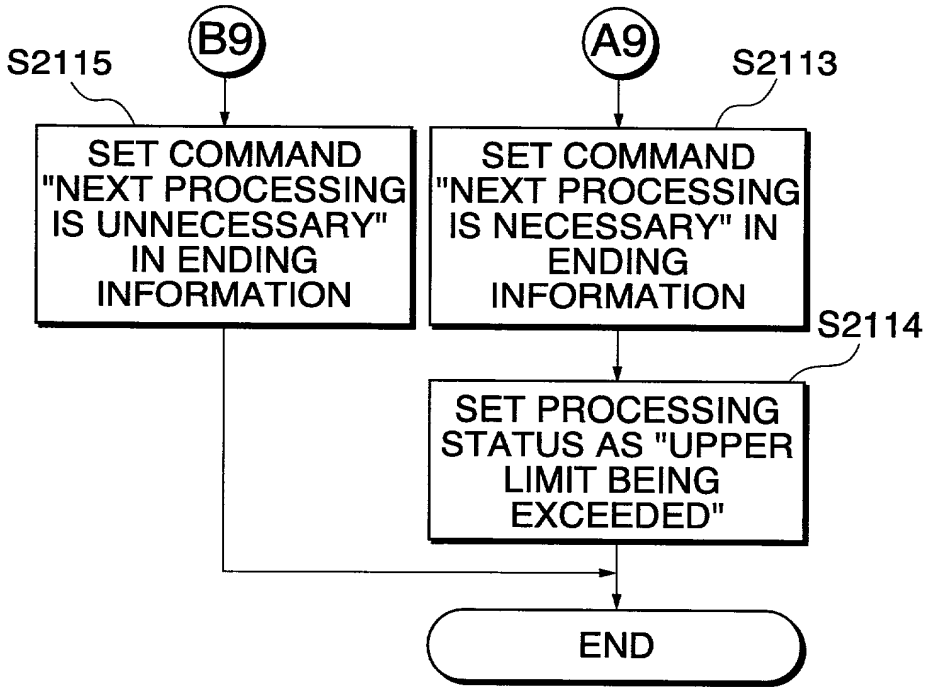
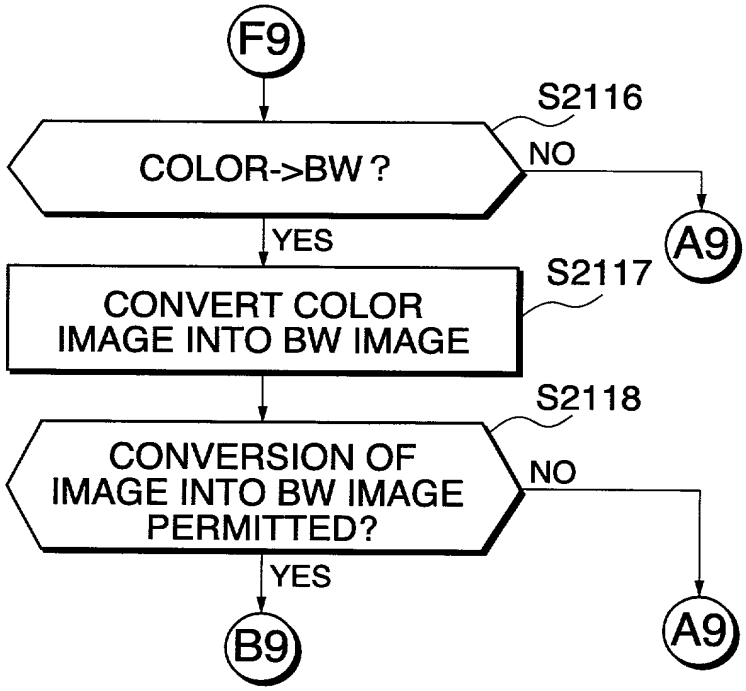



FIG. 50C